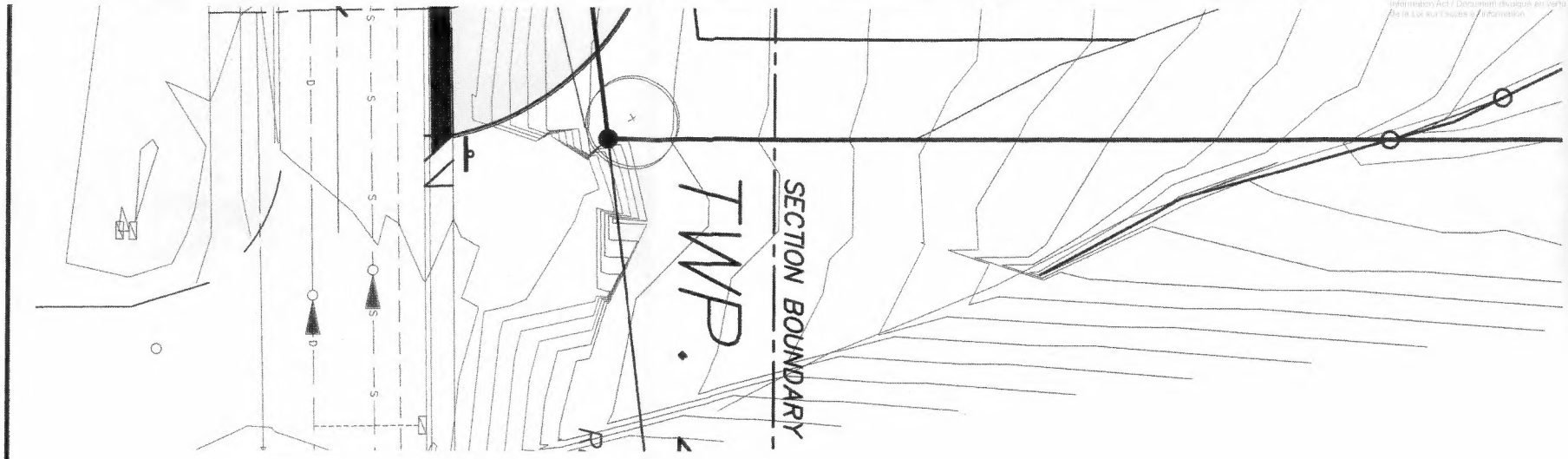
000001
PLAN
TWP.
SECTION BOUNDAR
TESKEY WAY
TESKEY WAY
MH S3
RIM=112.05
INV S=110.80
NW=110.75
MH S2
RIM=113.89
INV S=112.64
N=112.59
MH S1
RIM=114.86
N.INV=113.60
MH D1
RIM=114.80
N.INV=113.55
MH D2
RIM=113.82
INV S=112.57
N=112.52
MH D
RIM=1
INV S
NW
1-150 HxH 11.25° BEND C/W THRUST BLOCK INV 113.15
1-150 HxH 45° BEND C/W THRUST BLOCK INV 114.91
1-150 HxH 45° BEND C/W THRUST BLOCK INV 115.72
CB(114.89)
PROP. 21.09m 150mmø PVC WM @ 8.35%
PROP. 11.85m 200mmø SDR35 PVC SAN @ 8.10%
PROP. 12.19m 450mmø SDR35 PVC STM @ 8.09%
PROP. 22.73m 200mmø SDR35 PVC SAN @ 7.88%
PROP. 23.43m 250mmø SDR35 PVC STM @ 7.76%
PROP. 3.00m 150ø WM @ -5.0%
PROP. 12.06m 150mmø WM @ 6.72%
PROP. 14.58m 150mmø WM @ 1.0%
0.50m TYP.
0.50m TYP.
M.B.E.=112.25
M.B.E.=114.29
2FE=116.57
BFE=111.57
STEP=0.05
SLOPE=5.0%
2FE=117.73
BFE=114.98
STEP=0.05
SLOPE=5.0%
2FE=117.33
BFE=114.59
STEP=0.05
SLOPE=1.0%
2FE=118.55
BFE=115.81
STEP=0.05
SLOPE=2.0%
2FE=118.55
BFE=115.81
STEP=0.05
SLOPE=2.0%
2FE=119.77
BFE=117.03
STEP=0.05
SLOPE=2.0%
DOUBLE CHECK VALVE ASSEMBLY BY DEVELOPER CONTRACTOR, TO BE TESTED ANNUALLY
GATE VALVE
150mm WATER METER AND CHAMBER BY CITY FORCES AT DEVELOPER'S EXPENSE
TIE IN BY CITY OF CHILLIWACK FORCES AT DEVELOPER'S COST
EX. SAN. SVC. TO BE CAPPED AT PROP. LINE
EX. 250mmø PVC SAN SEWER @ 1.07%
LOCATION TO BE CONFIRMED
EX. 250mmø STM SEWER
LOCATION TO BE CONFIRMED
EX. 250mmø DI WATERMAIN
LOCATION TO BE CONFIRMED
11
10
9
8
12
13
14


1-150 HxH 11.25° BEND C/W THRUST BLOCK INV 113.15
MH S1 RIM=114.86 N.INV=113.60
MH S2 RIM=113.89 INV S=112.64 N=112.59
MH S3 RIM=112.05 INV S=110.80 NW=110.75
MH D3 RIM=111.96 INV S=110.71 NW=110.66
MH D1 RIM=114.80 N.INV=113.55
MH D2 RIM=113.82 INV S=112.57 N=112.52
C/W THRUST BLOCK INV 109.52
1-150 HxH 45° BEND C/W THRUST BLOCK INV 114.91
PROP. 3.00m 150Ø WM @ -5.0%
PROP. 21.09m 150mmØ WM @ 8.35%
PROP. 11.85m 200mmØ PVC SAN @ 8.10%
PROP. 22.73m 200mmØ SDR35 PVC SAN @ 7.88%
PROP. 23.43m 250mmØ SDR35 PVC STM @ 7.76%
PROP. 12.12m 250mmØ SDR35 PVC STM @ 8.09%
PROP. 13.65m SDR35 PVC STM @1.00%
CB(114.89)
M.B.E.=114.29
M.B.E.=112.25
M.B.E.=109.56
8
9
10
11
12
13
14
15
16
17
18
19
2FE=119.77 BFE=117.03 STEP=0.05 SLOPE=2.0%
2FE=118.55 BFE=115.81 STEP=0.05 SLOPE=2.0%
2FE=118.55 BFE=115.81 STEP=0.05 SLOPE=2.0%
2FE=117.33 BFE=114.59 STEP=0.05 SLOPE=1.0%
2FE=117.73 BFE=114.99 STEP=0.19 SLOPE=5.0%
2FE=116.51 BFE=113.77 STEP=0.05 SLOPE=2.0%
2FE=116.51 BFE=113.77 STEP=0.37 SLOPE=5.0%
2FE=115.29 BFE=112.55 STEP=0.05 SLOPE=2.0%
2FE=115.04 BFE=112.30 STEP=0.38 SLOPE=5.0%
2FE=113.82 BFE=111.08 STEP=0.05 SLOPE=1.0%
2FE=113.82 BFE=111.08 STEP=0.19 SLOPE=5.0%
2FE=112.60 BFE=109.86 STEP=0.05 SLOPE=2.0%
0.50m TYP.
0.50m TYP.
PROP. 15 STM @ 0 RECHARGE
WATER QU CHAMBER RIM=108. INVSW=10 NE=10
INV. 107
STM C AS PE W. RIF
TWP.
SECTION BOUN
000002



LEGAL:

LOT 26 EXCEPT: PART DEDICATED ROAD ON PLAN LMP15965; SECTIONS 5 AND 8, TOWNSHIP 26, NEW WESTMINSTER DISTRICT, PLAN 45018.

BENCHMARK:

ALL ELEVATIONS AND DISTANCES SHOWN ARE IN METRES. ELEVATIONS ARE DERIVED FROM CITY OF CHILLIWACK BENCHMARK, LOCATED ON THE SOUTHEAST CORNER OF TOP OF RESERVOIR LOCATED AT THE WEST END OF UPLANDS ROAD. ELEVATION BEING 74.870 METRES, GEODETIC DATUM.

NO.	ISSUE / REVISION	YYYY/MM/DD	BY
7.	REVISED AS PER ARCHITECTURAL PLAN	2009/04/20	WKB
6.	REVISED AS PER CITY COMMENTS	2009/02/19	WKB
5.	REVISED AS PER ARCHITECTURAL PLAN	2008/12/03	WKB
4.	REVISED AS PER TOWNHOUSE DESIGN	2008/06/05	WKB
3.	REVISED FISHERIES SETBACKS	2007/09/26	JBK
2.	SECOND SUBMISSION	2007/07/08	JBK
1	FIRST SUBMISSION	2007/04/03	JBK

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA

APRIL 20, 2009

SEAL

DESIGN

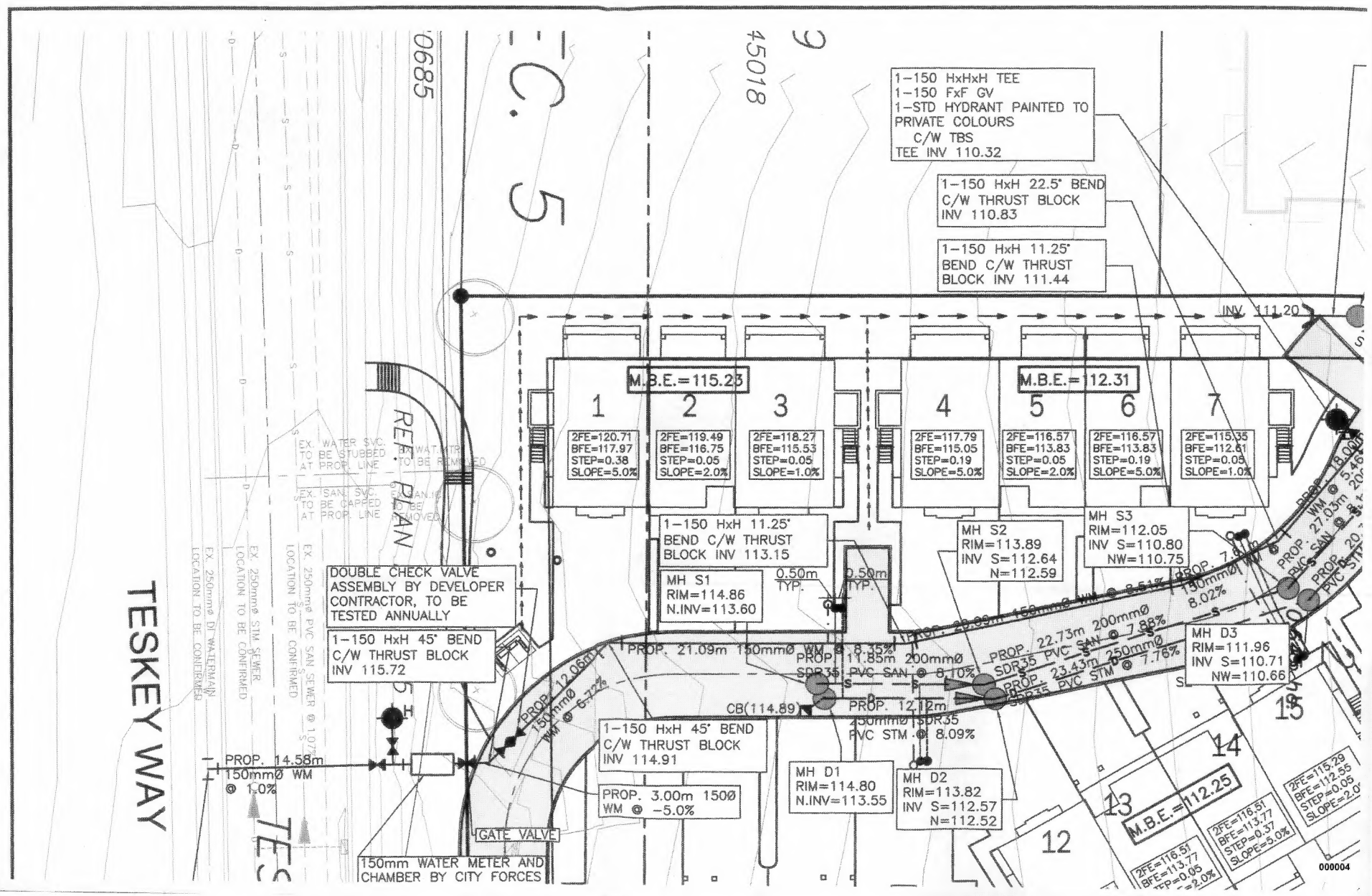
DRAWN

CHECKED

HORIZ. SCA

VERT. SCAL

000003



SERVICE CONNECTION							
BUILDING NUMBER	MINIMUM BASEMENT ELEVATION	STORM CONNECTION INVERT ELEVATION	PIPE SIZE	SANITARY CONNECTION INVERT ELEVATION	PIPE SIZE	WATER CONNECTION INVERT ELEVATION	PIPE SIZE
1 – 3	115.23m	114.52m	150mmø	114.52m	100mmø	114.52m	100mmø
4 – 7	112.31m	111.61m	150mmø	111.61m	100mmø	111.61m	100mmø
8 – 12	114.29m	113.59m	150mmø	113.59m	100mmø	113.59m	100mmø
12 – 15	112.25m	111.55m	150mmø	111.55m	100mmø	111.55m	100mmø
16 – 19	109.56m	108.86m	150mmø	108.86m	100mmø	108.86m	100mmø
20 – 21	108.20m	107.50m	150mmø	107.50m	100mmø	107.50m	100mmø

NOTE:
STORM MANHOLES ARE DRAINAGE DRYWELL AS PER DD–16
INSTALLED IN SOAK–PITS AS PER DD–6

APLIN & MARTIN CONSULTANTS LTD
101 – 33230 Old Yale Road, Abbotsford, B. C. V2S 2J5
Tel: (778) 550-0077, Fax: (778) 550-0076, E-mail: generalbc@aplinmartin.com

CLIENT: SYCAMORE DEVELOPMENTS LTD.

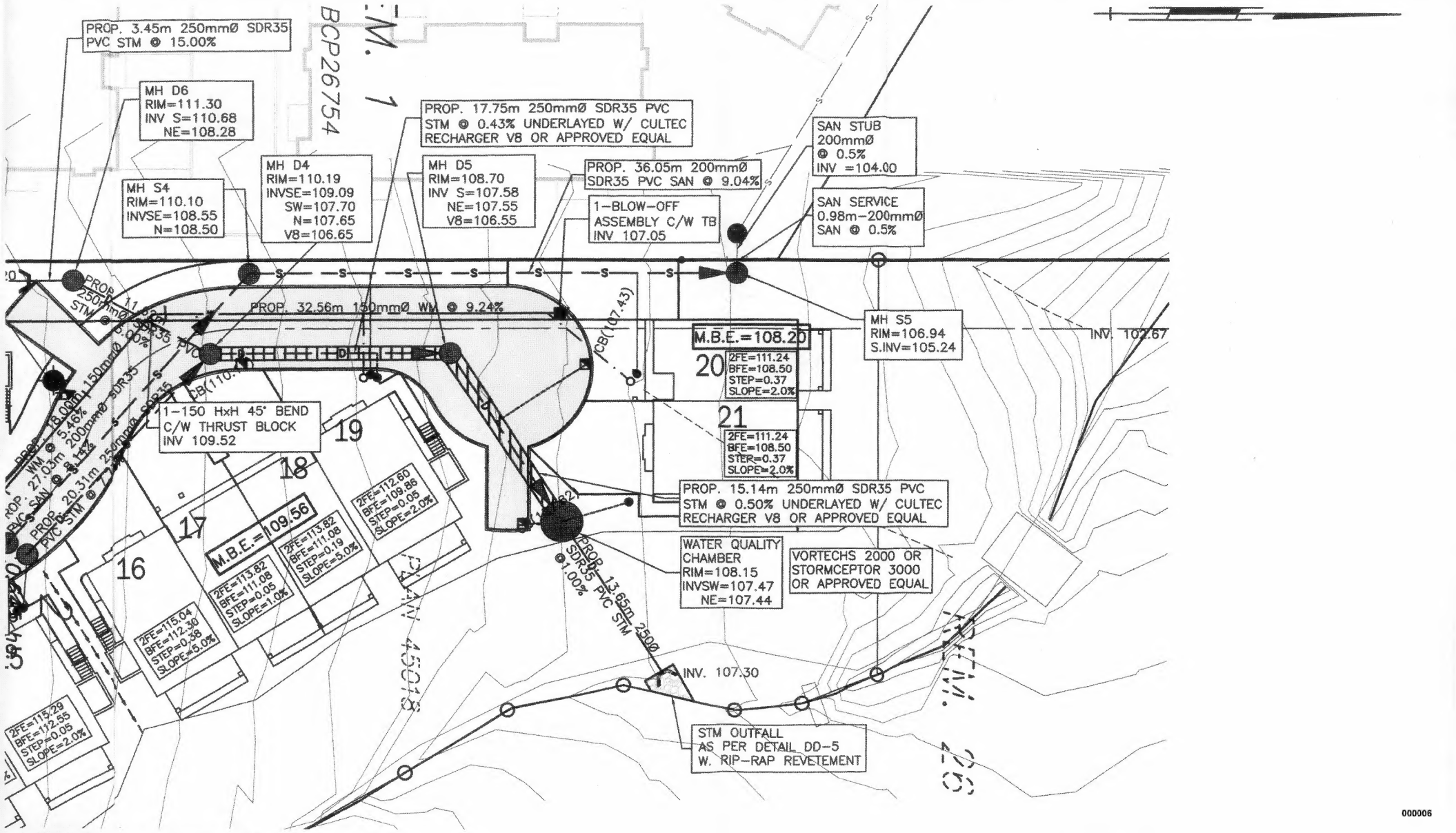
PROJECT: 21–UNIT TOWNHOUSE DEVELOPING – 5633 TESKEY WAY

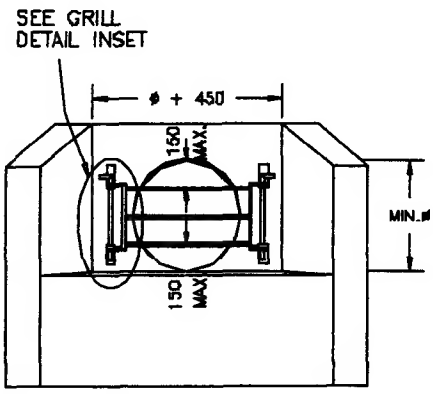
SITE SERVICING PLAN

DRAWING NO. 26182 – 06

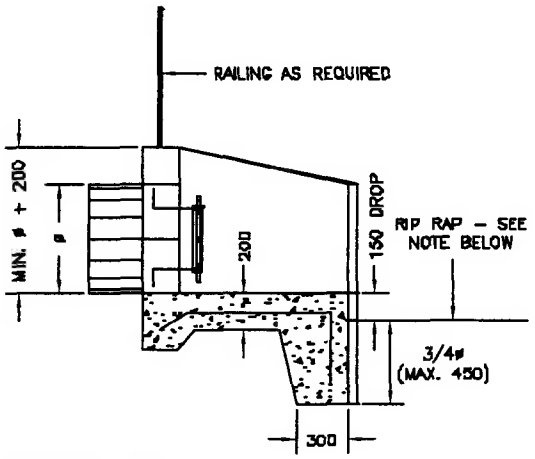
OF 06 OF 08

ISSUE/REVISION 7

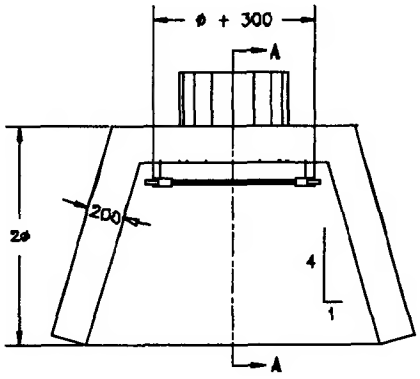




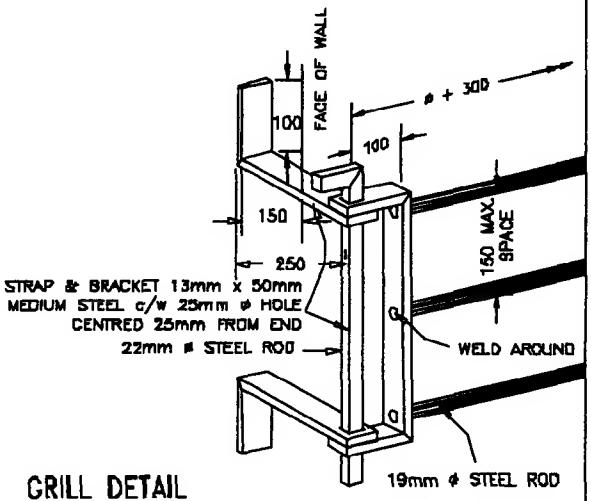
ELEVATION



SECTION A-A



PLAN



GRILL DETAIL

NOTES:

1. RIP RAP SUITABLY SIZED OR GABIONS c/w FILTER BED SHALL BE PLACED ON BOTTOM AND SIDES TO DESIGN WATER LEVEL AND DOWNSTREAM DISTANCE OF 1.5 TIMES THE DESIGN WATER VELOCITY (MINIMUM 1m).
2. PIPE SIZES LARGER THAN 1050mmø, WATER VELOCITIES GREATER THAN 2.13m/sec OR WALLS HIGHER THAN 2m SHALL REQUIRE A SPECIAL DESIGN FOR THE STRUCTURE.
3. REBAR 10m AT 200mm BOTH WAYS AND CENTRED PLUS ONE 10m AROUND PIPE.
4. REBARS TO HAVE MINIMUM 50mm COVER.
5. CONCRETE TO BE 21MPa AT 28 DAYS.
6. CHAMFER ALL EXPOSED CORNERS 25mm.
7. PLACE SUFFICIENT GRANULAR BACKFILL FOR DRAINAGE.
8. GRILLAGE NOT REQUIRED ON PIPE LESS THAN 600mmø.
9. ALL GRILLAGE MATERIALS TO BE GALVANIZED.

OUTLET STRUCTURE		
	REVISED:	APPROVED:
CITY OF CHILLIWACK	APPROVED:	DWG. NO. DD-5
	DATE: 05/03	
	DRAWN: SEH	

STATEMENT OF COMPENSATION

The projected civil site works will impinge into the existing SPEA area for the outfall to the storm drainage system. The area of impingement is approximately 41sm. The developer will replant an area with species recommended in the RAR using a 4:1 ratio thus replanting a total area of 164sm. This replanting work will be controlled by the environmental consultant.

P. 12 of 17

- need a fence - to protect SPEA
- any large trees removed in outfall area
- height of outfall to creek ??
  → how does that work

tree replacement per guidelines for hazzards.

- why ~~stream~~ + road & infiltration both going to treatment chamber.

FORM 1

Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

Riparian Areas Regulation: Assessment Report

Please refer to submission instructions and assessment report guidelines when completing this report.

Date: July 29, 2008

I. Primary QEP Information

First Name	Caroline	Middle Name		
Last Name	Astley			
Designation	R.P.Bio.	Company	Madrone Environmental Services Ltd.	
Registration #	1822	Email	[redacted]	
Address	202-2602 Mt. Lehman Rd.			
City	Abbotsford	Postal/Zip	V4X 2N3	Phone # 604-504-1972
Prov/state	BC	Country	Canada	

II. Secondary QEP Information (use Form 2 for other QEPs)

First Name	Josh	Middle Name		
Last Name	Taylor			
Designation	R.P.Bio.	Company	Jacques Whitford AXYS Ltd.	
Registration #	1396	Email	jtaylor@jacqueswhitford.com	
Address	4370 Dominion St., 5th Floor			
City	Burnaby	Postal/Zip	V5G 4L7	Phone # 604-436-3014
Prov/state	BC	Country	Canada	

III. Developer Information

First Name	Norm	Middle Name	
Last Name	Porter		
Company	Beech Developments Ltd.		
Phone #	[redacted]	Email	[redacted]
Address	#170 – 6660 Graybar Rd.		
City	Richmond	Postal/Zip	V6W 1H9
Prov/state	BC	Country	Canada

IV. Development Information

Development Type	Subdivision: >6 single family lots		
Area of Development (ha)	0.54	Riparian Length (m)	140
Lot Area (ha)	1.27	Nature of Development	Redevelopment
Proposed Start Date	15 Oct 2007	Proposed End Date	1 Mar 2010

V. Location of Proposed Development

Street Address (or nearest town)	5633 Teskey Way						
Local Government	City of Chilliwack			City	Chilliwack		
Stream Name	Lefferson Creek						
Legal Description (PID)	005-841-020			Region	Lower Mainland		
Stream/River Type	Stream			DFO Area	Lower Fraser		
Watershed Code	100-071800-84200						
Latitude	49	06	17.4	Longitude	121	55	54.4

Completion of Database Information includes the Form 2 for the Additional QEPs, if needed. Insert that form immediately after this page.

II. Additional QEP Information

First Name	Jace	Middle Name		
Last Name	Standish			
Designation	RPF	Company	J.T. Standish	
Registration #	1242	Email	jtstandish@yahoo.com	
Address	2760-210th St., RR 14			
City	Langley	Postal	V2Z 2A9	Phone # 604-533-3755
Prov/state	BC	Country	CANADA	

Table of Contents for Assessment Report

Number **Page**

Section 1. Description of Fisheries Resources Values and a Description of the Development proposal

(Provide as a minimum: Species present, type of fish habitat present, description of current riparian vegetation condition, connectivity to downstream habitats, nature of development, specific activities proposed, timelines)

SEE ORIGINAL ASSESSMENT (APPENDED) FOR COMPLETED INFORMATION. THIS ASSESSMENT WAS APPROVED (#633).

This assessment is a modification of the original assessment completed by Jacques Whitford AXYS Ltd. (JWA). During the course of construction, two (2) locations on the subject property where the building footprints encroach into the SPEA as determined in the original report were identified; the first at the north end of the lot at the east side of the two units located there – a small side deck encroaches into the SPEA, and in the centre of the lot, at the north end of the block of homes where the corner of the block encroaches into the SPEA.

After reviewing the building plans and the original report, it is my opinion that a small "flexing" of the SPEA to a maximum of four (4) metres is sufficient and appropriate to deal with the encroachment. An updated site plan has been included in this report and follows the original SPEA assessed by JWA.

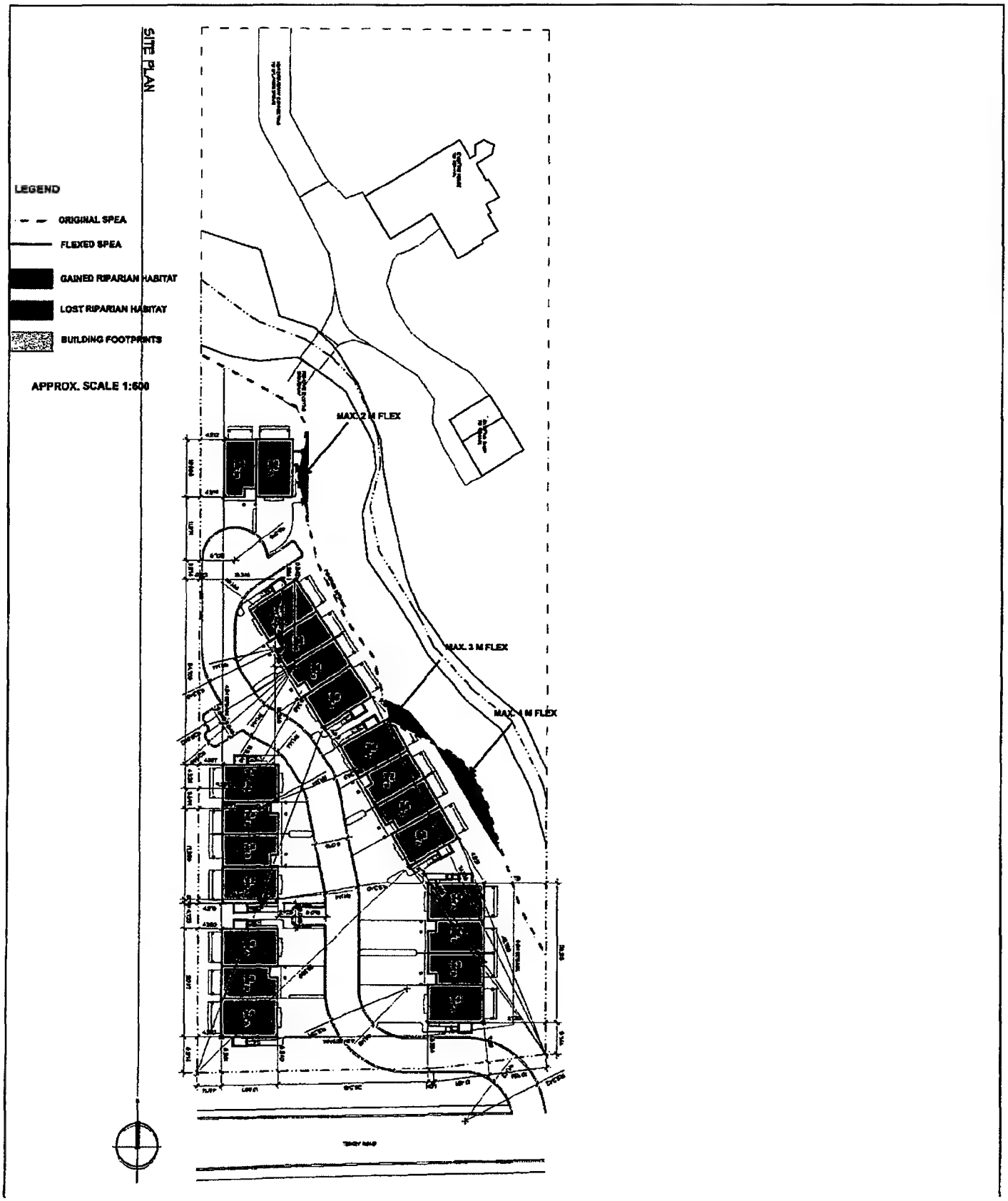
Section 2. Results of Riparian Assessment (SPEA width)

Attach or insert the Form 3 or Form 4 assessment form(s). Use enough duplicates of the form to produce a complete riparian area assessment for the proposed development

SEE ORIGINAL REPORT (APPENDED)

Section 3. Site Plan

Insert jpg file below


SITE PLAN
LEGEND
ORIGINAL SPEA
FLEXED SPEA
GAINED RIPARIAN HABITAT
LOST RIPARIAN HABITAT
BUILDING FOOTPRINTS
APPROX. SCALE 1:600
MAX. 2 M FLEX
MAX. 3 M FLEX
MAX. 4 M FLEX

Section 4. Measures to Protect and Maintain the SPEA

This section is required for detailed assessments. Attach text or document files, as need, for each element discussed in chapter 1.1.3 of Assessment Methodology. It is suggested that documents be converted to PDF *before* inserting into the assessment report. Use your "return" button on your keyboard after each line. You must address and sign off each measure. If a specific measure is not being recommended a justification must be provided.

1. Danger Trees	SEE ORIGINAL REPORT (APPENDED)
I, _____ *(name of qualified environmental professional)*, hereby certify that: a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*; b) I am qualified to carry out this part of the assessment of the development proposal made by the developer _____ *(name of developer)*; c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
2. Windthrow	
I, _____ *(name of qualified environmental professional)*, hereby certify that: a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*; b. I am qualified to carry out this part of the assessment of the development proposal made by the developer _____ *(name of developer)*; c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
d. Slope Stability	
I, _____ *(name of qualified environmental professional)*, hereby certify that: a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*; b. I am qualified to carry out this part of the assessment of the development proposal made by the developer _____ *(name of developer)*; c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
e. Protection of Trees	
I, _____ *(name of qualified environmental professional)*, hereby certify that: a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*; b. I am qualified to carry out this part of the assessment of the development proposal made by the developer _____ *(name of developer)*; c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
d. Encroachment	
I, _____ *(name of qualified environmental professional)*, hereby certify that: a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*; b. I am qualified to carry out this part of the assessment of the development proposal made by the developer _____ *(name of developer)*; c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
e. Sediment and Erosion Control	
I, _____ *(name of qualified environmental professional)*, hereby certify that: a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*; b. I am qualified to carry out this part of the assessment of the development proposal made by the developer _____ *(name of developer)*; c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
d. Stormwater Management	
I, _____ *(name of qualified environmental professional)*, hereby certify that: a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish*	

Protection Act; b. I am qualified to carry out this part of the assessment of the development proposal made by the developer _____ (*name of developer*) ; c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
e. Floodplain Concerns (highly mobile channel)	
I, _____ (*name of qualified environmental professional*) , hereby certify that: f. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*; g. I am qualified to carry out this part of the assessment of the development proposal made by the developer _____ (*name of developer*) ; h. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	

Section 5. Environmental Monitoring

Attach text or document files explaining the monitoring regimen Use your "return" button on your keyboard after each line. It is suggested that all document be converted to PDF *before* inserting into the PDF version of the assessment report. Include actions required, monitoring schedule, communications plan, and requirement for a post development report.

SEE ORIGINAL REPORT (APPENDED)

Section 6. Photos

Provide a description of what the photo is depicting, and where it is in relation to the site plan.

SEE ORIGINAL REPORT (APPENDED)

Section 7. Professional Opinion

Assessment Report Professional Opinion on the Development Proposal's riparian area.

Date [July 29, 2008]

1.I/We Caroline Astley R.P.Bio., Josh Taylor R.P.Bio., Jace Standish R.P.F.

Please list name(s) of qualified environmental professional(s) and their professional designation that are involved in assessment.)

hereby certify that:

a) I am/We are qualified environmental professional(s), as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
b) I am/We are qualified to carry out the assessment of the proposal made by the developer Beech Developments Ltd. , which proposal is described in section 3 of this Assessment Report (the "development proposal"),
c) I have/We have carried out an assessment of the development proposal and my/our assessment is set out in this Assessment Report; and
d) In carrying out my/our assessment of the development proposal, I have/We have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation; AND

2. As qualified environmental professional(s), I/we hereby provide my/our professional opinion that:

a) [X] if the development is implemented as proposed by the development proposal there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed, **OR**
(Note: include local government flex letter, DFO Letter of Advice, or description of how DFO local variance protocol is being addressed)

b) [ ] if the streamside protection and enhancement areas identified in this Assessment Report are protected from the development proposed by the development proposal and the measures identified in this Assessment Report as necessary to protect the integrity of those areas from the effects of the development are implemented by the developer, there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed.

[NOTE: **"qualified environmental professional"** means an applied scientist or technologist, acting alone or together with another qualified environmental professional, if
(a) the individual is registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association,
(b) the individual's area of expertise is recognized in the assessment methods as one that is acceptable for the purpose of providing all or part of an assessment report in respect of that development proposal, and
(b) the individual is acting within that individual's area of expertise.]

s.19(1)

FORM 1

Riparian Areas Regulation - Qualified Environmental Professional - Assessment Report

Riparian Areas Regulation: Assessment Report

Date: 27-SEP-2007

I. Primary QEP Information

First Name	Josh	Middle Name	L.		
Last Name	Taylor				
Designation	R.P.Bio.	Company	Jacques Whitford AXYS Ltd.		
Registration #	1396	Email	jtaylor@jacqueswhitford.com		
Address	4370 Dominion Street, 5th Floor				
City	Burnaby	Postal/Zip	V5G 4L7	Phone #	604-436-3014
Prov/state	BC	Country	CANADA		Ext. 224

II. Secondary QEP Information (use Form 2 for other QEPs)

First Name	Jace	Middle Name			
Last Name	Standish				
Designation	R.P.F.	Company	J.T. Standish		
Registration #	1242	Email	jtstandish@yahoo.com		
Address	2760 – 210th Street, R.R. #14				
City	Langley	Postal	V2Z 2A9	Phone #	604-533-3755
Prov/state	BC	Country	CANADA		

III. Developer Information

First Name	Norm	Middle Name	
Last Name	Porter		
Company	Beech Developments Ltd.		
Phone #		Email:	
Address	#170, 6660 Graybar Road		
City	Richmond	Postal/Zip	V6W 1H9
Prov/state	BC	Country	CANADA

IV. Development Information

Development Type	Subdivision: >6 Single Family Lots Construction: Single Family Residential		
Area of Development (ha)	0.54	Riparian Length (m)	140
Lot Area (ha)	1.27	Nature of Development	Redevelopment
Proposed Start Date	15 OCT 2007	Proposed End Date	1 Mar 2010

V. Location of Proposed Development

Street Address (or nearest town)	5633 Teskey Way						
Local Government	City of Chilliwack			City	Chilliwack		
Stream Name	Lefferson Creek						
Legal Description (PID)	005-841-020			Region	Region 2		
Stream/River Type	Stream			DFO Area	Lower Fraser		
Watershed Code	100-071800-84200						
Latitude	49	06	17.4	Longitude	121	55	54.4

Completion of Database Information includes the Form 2 for the Additional QEPs, if needed. Insert that form immediately after this page.

Table of Contents for Assessment Report

Page Number

Section 1. Description of Fisheries Resources Values and a Description of the Development proposal

The development proposal is to subdivide the southern half of 5633 Teskey Way (the subject property) into 11 new lots for the construction of single family homes (see Site Plan). Activities associated with the proposed development will include vegetation clearing followed by construction of a paved access road and single family homes. Vegetation clearing is expected to occur during the winter of 2007/2008 and home construction is to begin as early as fall 2008.

Lefferson Creek flows in a northwest direction across the middle of the subject property, along the north edge of the proposed subdivision (see Site Plan). Except for a 10 to 40 m wide riparian forest corridor along Lefferson Creek, the majority of the forest on the subject property has been cleared for agricultural, residential and forestry purposes. On the north half of the subject property is a single family dwelling with a detached garage and chicken coop. The south half of the property is dominated by a hayfield. Access to the existing residence is provided by a gravel driveway that originates from Teskey Way, at the south end of the property, then runs along the west side of the property and crosses Lefferson Creek over a concrete vehicle bridge, near the center of the property (Photo 1). During and after development of the proposed subdivision on the south half of the property, the existing gravel driveway and concrete bridge will continue to provide vehicle access across Lefferson Creek (i.e., through the SPEA) to the residence on the north side of the property. There is also a wooden foot bridge crossing Lefferson Creek on this property, about 10 m upstream of the vehicle bridge. The 10 m long stream section between theses two bridges has 1.5 m tall banks that are landscaped with vertical boulder walls (Photo 2).

Lefferson Creek is located in the Chilliwack Creek watershed. Chilliwack Creek is a direct tributary to the Fraser River and is inhabited by salmonids species including chum salmon (*Oncorhynchus keta*), coho salmon (*O. kisutch*) and cutthroat trout (*O. clarki*). The portion of Lefferson Creek located within the subject property is classified as a Class B watercourse by the City of Chilliwack's Watercourse Classification Map (WCM). A Class B designation means that a watercourse is not inhabitated by fish but provides water, food and nutrients to downstream fish populations. Sections of Lefferson Creek located downstream of the subject property, north of Uplands Road, are designated as Class A watercourses by the WCM. The Class A designation means that fish are present or potentially present.

Lefferson Creek has the following general characteristics within the subject property (Photos 1 & 3):

- a mean bankfull width of 1.8 m,
- an mean slope of 6.5 percent,
- an irregular meandering pattern with occasional mid channel bars,
- a cascade-pool morphology, and
- bed substrate consisting of roughly 60% gravels, 30% fines and 10% cobbles.

The riparian tree species are dominated by western redcedar (*Thuja plicata*) and paper birch (*Betula payrifera*) but also includes bitter cherry (*Prunus emarginata)*, willow (*Salix* sp.), red alder (*Alnus rubra*) and maple (Acer sp.). The shrub species are dominated by Himalayan blackberry (*Rubus discolor*) and common horsetail (*Equisetum arvense*) but also includes sword fern (*Polystichum munitum*), lady fern (*Athyrium filix-femina*), salmonberry (*Rubus spectabilis*), skunk cabbage (*Lysichiton americanum*), marsh skullcap (*Scutellaria galericulata*), stinging nettle (*Urtica dioica*),

snowberry (*Symphoricarpos albus*), thimbleberry (*Rubus parviflorus*) and evergreen blackberry (*Rubus laciniatus*).

Section 2. Results of Detailed Riparian Assessment

Refer to Chapter 3 of Assessment Methodology

Date: 1-May-2007

Description of Water bodies involved (number, type): Lefferson Creek

Stream	X
Wetland	
Lake	
Ditch	
Number of reaches	1
Reach #	1

Channel width and slope and Channel Type (use only if water body is a stream or a ditch, and only provide widths if a ditch)

	Channel Width(m)		Gradient (%)
starting point	4.6	high	
upstream	1.8		
	1.1		
	1.0		6
	0.9		
	0.9		
downstream	1.3	low	
	1.9		
	2.2		7
	8.1		
	1.5		
Total: minus high /low	16.3		
mean	1.81		6.5
	R/P	C/P	S/P
Channel Type		X	

I, Josh Taylor, M.Sc., R.P.Bio., hereby certify that:
a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Beech Developments Ltd.;
c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

Site Potential Vegetation Type (SPVT)

	Yes	No
SPVT Polygons		X

Tick yes only if multiple polygons, if No then fill in one set of SPVT data boxes

I, Josh Taylor, M.Sc., R.P.Bio., hereby certify that:
a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Beech Developments Ltd.;
c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

Polygon No:	1		
	LC	SH	TR
SPVT Type			X

Method employed if other than TR: N/A

Polygon No:			
	LC	SH	TR
SPVT Type			

Method employed if other than TR:

Zone of Sensitivity (ZOS) and resultant SPEA

Segment No:	1	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons						
LWD, Bank and Channel Stability ZOS (m)	10							
Litter fall and insect drop ZOS (m)	10							
Shade ZOS (m) max	5.4	South bank	Yes	X	No			
SPEA maximum	10	(For ditch use table 3-7)						

Segment No:		If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons						
LWD, Bank and Channel Stability ZOS (m)								
Litter fall and insect drop ZOS (m)								
Shade ZOS (m) max		South bank	Yes		No			
SPEA maximum		(For ditch use table 3-7)						

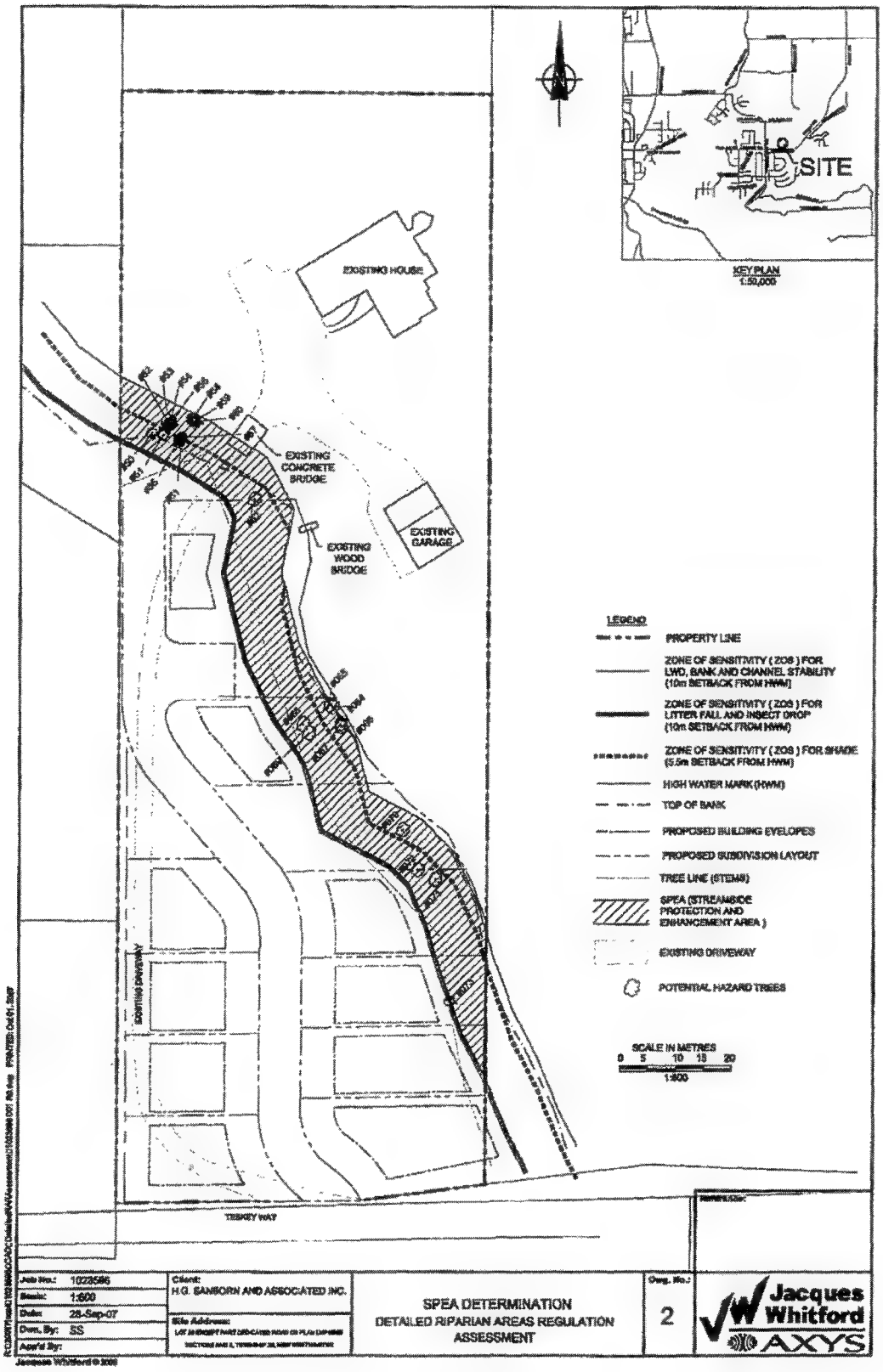
Segment No:		If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons						
LWD, Bank and Channel Stability ZOS (m)								
Litter fall and insect drop ZOS (m)								
Shade ZOS (m) max		South bank	Yes		No			
SPEA maximum		(For ditch use table3-7)						

I, Josh Taylo, M.Sc., R.P.Bio., hereby certify that:

a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Beech Developments Ltd.;
c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

Comments

Section 3. Site Plans


SITE
KEY PLAN
1:50,000
EXISTING HOUSE
EXISTING CONCRETE BRIDGE
EXISTING WOOD BRIDGE
EXISTING GARAGE
EXISTING DRIVEWAY
TESKEY WAY
LEGEND
PROPERTY LINE
ZONE OF SENSITIVITY (ZOS) FOR LWD, BANK AND CHANNEL STABILITY (10m SETBACK FROM HWM)
ZONE OF SENSITIVITY (ZOS) FOR LITTER FALL AND INSECT DROP (10m SETBACK FROM HWM)
ZONE OF SENSITIVITY (ZOS) FOR SHADE (5.5m SETBACK FROM HWM)
HIGH WATER MARK (HWM)
TOP OF BANK
PROPOSED BUILDING EVELOPES
PROPOSED SUBDIVISION LAYOUT
TREE LINE (STEMS)
SPEA (STREAMSIDE PROTECTION AND ENHANCEMENT AREA)
EXISTING DRIVEWAY
POTENTIAL HAZARD TREES
SCALE IN METRES
0 5 10 15 20
1:300
Job No.: 1023586
Scale: 1:600
Date: 28-Sep-07
Dwn. By: SS
Appr'd By:
Client:
H.G. SAMSORN AND ASSOCIATED INC.
Site Address:
SPEA DETERMINATION
DETAILED RIPARIAN AREAS REGULATION
ASSESSMENT
Dwg. No.:
2
Jacques Whitford
AXYS

Section 4. Measures to Protect and Maintain the SPEA

This section is required for detailed assessments. Attach text or document files, as needed, for each element discussed in chapter 1.1.3 of Assessment Methodology. It is suggested that documents be converted to PDF *before* inserting into the assessment report. Use your "return" button on your keyboard after each line. You must address and sign off each measure. If a specific measure is not being recommended a justification must be provided.

1. Danger Trees

I, **Jace Standish, R.P.F.**, hereby certify that:

e) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;

f) I am qualified to carry out this part of the assessment of the development proposal made by the developer **Beech Developments Ltd.**;

g) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation

2. Windthrow

I, **Jace Standish, R.P.F.**, hereby certify that:

a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;

b. I am qualified to carry out this part of the assessment of the development proposal made by the developer **Beech Developments Ltd.**;

c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation

d. Slope Stability

I, **Josh Taylor, M.Sc., R.P.Bio.**, hereby certify that:

a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;

b. I am qualified to carry out this part of the assessment of the development proposal made by the developer **Beech Developments Ltd.**;

c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation

e. Protection of Trees

I, **Josh Taylor, M.Sc., R.P.Bio.**, hereby certify that:

a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;

b. I am qualified to carry out this part of the assessment of the development proposal made by the developer **Beech Developments Ltd.**;

c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation

d. Encroachment

I, **Josh Taylor, M.Sc., R.P.Bio.**, hereby certify that:

a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;

b. I am qualified to carry out this part of the assessment of the development proposal made by the developer **Beech Developments Ltd.**;

c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation

e. Sediment and Erosion Control

I, **Josh Taylor, M.Sc., R.P.Bio.**, hereby certify that:

a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;

b. I am qualified to carry out this part of the assessment of the development proposal made by the developer **Beech Developments Ltd.**;

c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation

d. Stormwater Management

I, **Josh Taylor, M.Sc., R.P.Bio.**, hereby certify that:

a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;

b. I am qualified to carry out this part of the assessment of the development proposal made by the developer **Beech**

Developments Ltd.; c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
e. Floodplain Concerns (highly mobile channel)	**N/A**
I, **Josh Taylor, M.Sc., R.P.Bio.**, hereby certify that: f. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*; g. I am qualified to carry out this part of the assessment of the development proposal made by the developer **Beech Developments Ltd.**; h. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	

Measures to Protect and Maintain the SPEA

Assessment and Treatment of Danger Trees

Trees within the SPEA were assessed by Jace Standish, R.P.F., for potential danger to the proposed development based on WDTA methodology[1]. A total of 25 trees occurring within the SPEA were identified as posing a potential risk to the proposed development, as shown on the site plan (Section 3). Five of the danger trees, Nos. 64, 65, 66, 67, 69, and 72, must be removed. Three trees, Nos. 62, 68 and 71, are recommended for modification – i.e., the removal of weak limbs or co-dominant stems. It is recommended that tree no. 73 receive a more detailed follow-up tree assessment (i.e., involving drilling and other more intensive methods) to better determine whether it should be removed.

For the 20 potential danger trees not requiring immediate removal (including those modified) regular monitoring is recommended. Regular monitoring is an option for these 20 trees because they currently do not represent a hazard (i.e., as long as the required modifications are made) but could become a danger in the next few years. Monitoring should consist of regular, general, vigilant observation for tree damage or deterioration but also must include an *annual tree risk re-assessment* by a qualified arborist or forester for the *first 5 years* following development and *every 5 years after* that. Re-assessments should also be carried out following any severe windstorms or other disturbances.

B.C. Ministry of Environment guidelines[2] require replacement for trees removed in a riparian area, in order to enhance wildlife habitat and to promote sustainability of the riparian forest, according to the size (diameter) of the tree removed. Assuming that only the minimum five trees are removed, the proponent must address these guidelines by planting a total of 7 trees taller than 1.5 m and 14 trees taller than 2 m. If Tree No. 73 is removed, an additional six trees taller than 2 m are required. If all the tagged trees were removed, an additional 11 trees taller than 1.5 m and 56 trees taller than 2 m would be needed. In that case, the grand total would be 18 trees taller than 1.5 m and 76 trees taller than 2 m.

In areas of well to imperfectly drained soils, it is recommended that the planted trees include a mixture of western red cedar with some paper birch, bitter cherry and red alder. Trees should not be planted on the small floodplain of Lefferson Creek, where the water table is continually near the soil surface. If planting is needed in those areas, shrubs and small trees that adapted to the shallow, wet soils should be used. For example, native willows (Salix species), Douglas maple,

[1] Standish. 2007. Windfall and Tree Risk Assessment, 5633 Teskey Way, Chilliwack, British Columbia. Report prepared by J. T. Standish, Langley, BC, for Jacques Whitford-AXYS, Burnaby, BC.
[2] Ministry of Environment, Lands and Parks, B.C. Environment, Lower Mainland Region, Surrey, B.C. November 1996.

vine maple (Acer circinatum Pursh), red osier dogwood (Cornus stolonifera Michx.), red elderberry (Sambucus racemosa L.), salmonberry or thimbleberry might be used.

Tree falling, topping, limbing and pruning must be carried out by qualified fallers and arborists and planned and executed to minimize damage to the residual stand. It should also be noted that felled trees must be left in the SPEA. If the proponent would like to propose a revision to this replanting plan, they should seek advice from a professional forester (R.P.F.) or agrologist (P.Ag.).

For further details regarding the assessment and treatment of potential danger trees within the SPEA, please refer to the attached danger tree assessment report[1].

Windthrow

A windthrow assessment was conducted for the proposed development by Jace Standish, R.P.F., using the methodology presented in the "Windthrow Handbook for British Columbia Forests" produced in 1994 by the BC Ministry of Forests[3]. This windthrow assessment assumed that the proposed development would results in the clearing of all trees located west of the 10 m wide SPEA. Tall, shallow-rooted western red cedars and paper birches, occurring within the small floodplain of Lefferson Creek, are prone to windfall from westerly winds. However, no new clearing is proposed in those areas. In other parts of the SPEA, windfall is absent, and windfall risk is probably low because:

- the trees are generally shorter;
- most trees are deciduous trees (which have a lower aerodynamic drag coefficient than most conifers);
- topography partially shelters the SPEA from easterly, winter, outflow winds; and
- the forest edge is oriented more or less parallel with strong, southerly, storm winds.

Given the above, the proposed development should not increase windthrow risk for trees in the SPEA. Furthermore, any removal of hazard trees or hazardous parts of trees within the SPEA should result in a decrease of only one or two percent in tree density.

For further details please refer to the attached windthrow assessment report[1].

Tree Protection during Construction

Severing the roots, changing the grade of the ground and other tree root incursions often lead to the decline and death of trees. Therefore, to protect trees within the SPEA during construction, a tree root protection area shall be delineated 3 m landward of the SPEA. The boundary of tree protection area shall be marked with stakes and flagging prior to commencement of any onsite construction activities. The following activities are not permitted to occur within the tree protection areas:

- installation of paving or other impermeable structures;
- trenching;
- ground re-grading greater than 30 cm in depth;
- vehicle parking; and
- soil contamination via concrete washout or other pollutants.

[3] Stathers, R.J., T.P. Rollerson and S.J. Mitchell 1994. Windthrow handbook for British Columbia forests. B.C. Ministry of Forests, Research Program, working paper 9401. Victoria.

Tree protection plans will be communicated to everyone involved in the construction project. Damage clauses will be written into all service contracts imposing financial penalties on any contractor(s) who damage trees located within the SPEA. Roots that are broken during construction should be cut cleanly with a saw. The extent of root protection zones prescribed above may be adjusted based on the recommendations of an ISA certified Arborist.

Slope Stability

The slope of the stream bank within the SPEA ranges from 30 to 90 degrees. Bank height, measured vertically from the point where the slope equals or exceeds 3:1 (at or below the high water mark) to the top-of-bank, was no more than 2.0 m. For bank slopes less than 15 m in height, the exclusion of both permanent structures and significant grading fill (i.e., greater than 0.5 m depth) within a minimum distance of two times the bank height should be adequate to prevent impacts of a development on the slope stability of the SPEA[4]. Given a 10 m SPEA and a 3 m root protection setback from the SPEA, as proposed for this development, it is expected that no permanent structures, and no excavation or fill greater than 30 cm depth in depth, will occur within 13 m of the high water mark. This 13 m setback for permanent structures and significant re-grading, is 6.5 times the bank height (i.e., much greater than 2 times). Therefore, we consider that the proposed development will not have an adverse impact on the stability of the slope and, as such, the risk to the SPEA can be considered to be very low.

Encroachment

An easement or restrictive covenant must be established over the SPEA to protect its habitat. The only activity permitted within the SPEA will be the removal of danger trees. The edge of the SPEA will be marked by temporary fencing during construction. After construction, the edge of the SPEA will be marked with signs and a five foot (1.52 m) tall wooden split rail fence. Wire mesh will be installed along the back of the fence, extending from the top rail to one foot above the ground. The text on the sign should read "Lefferson Creek - Please Respect this Sensitive Fish Habitat", or something similar.

Sediment and Erosion Control

A preliminary sediment and erosion control plan (SECP), designed to prevent discharge of sediment laden water into the SPEA and Lefferson Creek during construction, has been developed by Aplin & Martin Consultants Ltd (available upon request). This will be a performance based SECP intended to meet or exceed the standards outlined in the DFO/MELP "Land Development Guidelines for the Protection of Aquatic Life"[5]. In this regard, increases in suspended solid levels above background levels should not exceed 25 mg/L during normal dry weather operation or 75 mg/L during storm events. The detailed SECP must be completed and implemented from the beginning of construction. Specific sediment and erosion control measures from the SECP will include:

- a site gravel construction entrance pad,
- perimeter silt fencing,
- lot-specific gravel pads, silt fencing and cutoff drains;
- catch basin inlet protection;
- road sweeping;

[4] CoS. 2006. City of Surrey riparian setback determination pilot project. Report prepared by Lanarc Consultants Ltd. (with Jacques Whitford Ltd.) for the City of Surrey.
[5] Chilibeck, B., G. Chislett, and G. Norris. 1993. Land development guidelines for the protection of aquatic habitat. Reported prepared by the Habitat Management Division of the Department of Fisheries and Oceans and the Integrated Management Branch of the BC Ministry of Environment, Lands and Parks.

- stabilization of stockpiles, and
- a Stormceptor/Vortechs oil/grit separator.

Timing of construction activities will also be coordinated to coincide with dry weather conditions. In the event of rainfall events that generate surface runoff, all works contributing to the creation of sediment laden water will be suspended until conditions improve and are deemed acceptable by the on site environmental monitor. Silt control works are to remain in place until storm water detention tanks are completed and the development is 90% developed and landscaped.

Floodplain

Within the subject property, Lefferson Creek is contained within well defined banks and does not have an extended floodplain (i.e., past the high water mark) or alluvial fan. Therefore, the width of the SPEA (i.e., 3 m landward of the high water mark) should be sufficient to protect the SPEA from flood hazards and damage.

Stormwater Management

The City of Chilliwack's Subdivision and Land Development Bylaw 2004, No. 3055, requires that a storm water management plan (SMP) be prepared for the proposed subdivision development. A prelimary SMP has being prepared for the project (available upon request) by a Professional Engineer (Aplin & Martin Consultants Ltd.) following the City's "Policy and Design Criteria Manual for Surface Water Management"[6], which meets the intent of DFO's "Urban Stormwater Guidelines"[7]. A specific objective of this SMP is to capture the small storm run-off event (i.e., 50% of the rainfall event that occurs once per year, on average) within the RAA (i.e., within 30 m from the high water mark). Specific stormwater management measures from the SMP will include:

- disconnected roof leaders discharging to splash pads,
- extra-depth topsoil (300 mm minimum) in all landscaped areas,
- a series of infiltration swales along the edge of each lot,
- a storm sewer system with catchbasins, perforated manholes (i.e., within soak-pits), and service connections,
- an overland flow route for major flows,
- an underground retention & detention facility sized for 214m^3,

The construction of a new stromwater outfall may be required within the SPEA. If an outfall is required, the developer will obtain DFO review for the outfall and submit a notification under Part 7 of the Water Act Regulation.

Note:

If the subdivision development described in this assessment report changes in a way that could affect the RAA, it may be necessary to amend (or add to) the measures already prescribed to protect the SPEA.

[6] CH2MHILL. 2002. Policy and design criteria manual for surface water management. Report prepared by CH2MHill for the City of Chilliwack.
[7] DFO. 2001. Urban Stormwater guidelines and best management practices for protection of fish and fish habitat. Draft discussion paper.

Section 5. Environmental Monitoring

Post-Construction Environmental Monitoring

All construction activities on the proposed lots with the potential to adversely affect fish and fish habitat shall be monitored by a "qualified environmental monitor" (QEM). A QEM is defined as a biologist or other professional who has previous training and experience in environmental monitoring of construction works. The QEM will:

- hold a pre-construction meeting, on site, with the contractor undertaking the work to ensure understanding of all the measures outlined in this Assessment Report;
- ensure that the limit of clearing, SPEA's, and tree protection areas have been demarcated by a surveyor and that temporary fencing is installed where required;
- monitor the site to confirm the effectiveness of installed sediment and erosion control measures at least once a week during rain events; and
- be present during clearing and grubbing of trees/vegetation and stripping activities conducted within the Riparian Assessment Area (RAA) (i.e., within 30 metres from High Water Mark).

The QEM shall have written authority to modify and/or halt construction activities if deemed necessary for the protection of fish and fish habitat.

In accordance with section 5(a) of the Riparian Areas Regulation, a post-development report will be submitted within six (6) months of completion of the development. The report will summarize the development and state whether or not the development occurred in compliance with the conditions outlined in this report. The report will include photographs of the development, measures implemented to protect the SPEA, and a summary with respect to sediment and erosion control measures implemented during construction. The post-development report will be submitted to the RAR notification system and copied to the City of Chilliwack and Fisheries and Oceans Canada.

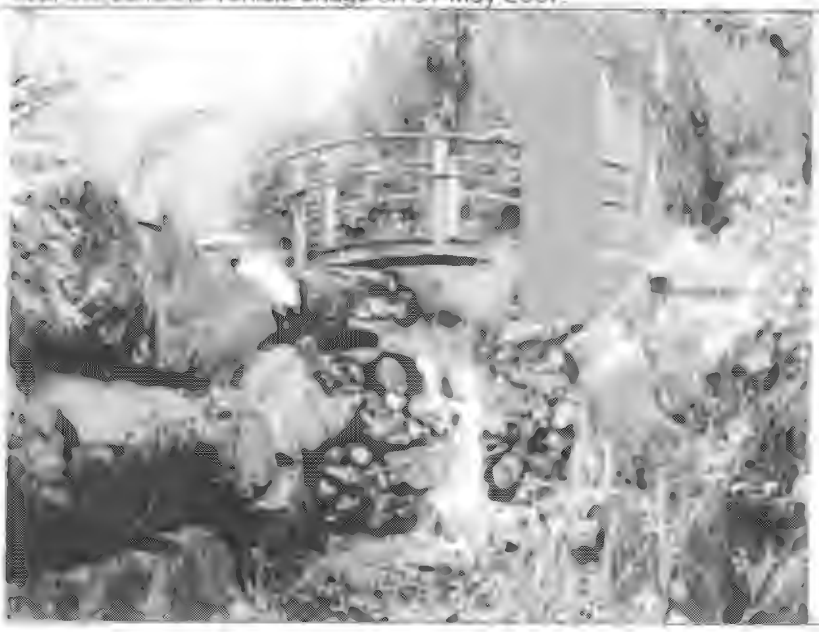
The subdivision developer will be responsible for retaining a QEM to conduct the construction monitoring work and file the post-development report.

s.19(1)

Section 6. Photos

Label **Photo 1.** Upstream view of Lefferson Creek and the concrete vehicle bridge taken from near the western property line on 01-May-2007.

Label **Photo 2.** Upstream view of Lefferson Creek and the wooden foot bridge taken from near the concrete vehicle bridge on 01-May-2007.



s.19(1)

Label **Photo 3** Upstream view of Lefferson Creek, just within the eastern property line, taken on 01-May-2007

Section 7. Professional Opinion

Assessment Report Professional Opinion on the Development Proposal's riparian area.

Date 27-SEP-2007

1.We Josh Taylor (R.P.Bio.) and Jace Standish (R.P.F.)

hereby certify that:

a) We are qualified environmental professional(s), as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
b) We are qualified to carry out the assessment of the proposal made by the developer **Beech Developments Ltd.**, which proposal is described in section 3 of this Assessment Report (the "development proposal"),
c) We have carried out an assessment of the development proposal and our assessment is set out in this Assessment Report; and
d) In carrying out our assessment of the development proposal, We have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation; AND

2. As qualified environmental professional(s), we hereby provide our professional opinion that:

a) ☐ if the development is implemented as proposed by the development proposal there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed, **OR**

(Note: include local government flex letter, DFO Letter of Advice, or description of how DFO local variance protocol is being addressed)

b) ☒ if the streamside protection and enhancement areas identified in this Assessment Report are protected from the development proposed by the development proposal and the measures identified in this Assessment Report as necessary to protect the integrity of those areas from the effects of the development are implemented by the developer, there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed.

[NOTE: **"qualified environmental professional"** means an applied scientist or technologist, acting alone or together with another qualified environmental professional, if

(a) the individual is registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association,

(b) the individual's area of expertise is recognized in the assessment methods as one that is acceptable for the purpose of providing all or part of an assessment report in respect of that development proposal, and

(c) the individual is acting within that individual's area of expertise.]

22 September 2007

Jacques Whitford AXYS Limited
4370 Dominion Street, 5th floor
Burnaby, B.C.
V5G 4L7

Attention: Josh Taylor, R.P. Bio.

Dear Sirs:

RE: Windfall and Tree Risk Assessment, 5633 Teskey Way, Chilliwack, British Columbia, Job # 1023596

On 17 September 2007 I carried out a field assessment for windthrow and hazard trees at 5633 Teskey Way, along the west side of Lefferson Creek, in Lot 26, Sections 5 & 8, New Westminster Land District. There is to proposal to subdivide the southern half of 5633 Teskey Way into 11 new lots for the construction of single family homes. Lefferson Creek flows in a northwest direction across the middle of the subject property, along the north edge of the proposed subdivision. Jacques Whitford – AXYS Ltd. have applied the province's detailed Riparian Areas Regulations to determined that a Streamside Protection and Enhancement Area (SPEA) of 10 m from the creek's high-water-mark will be required for the proposed development. It is my understanding that development, including the clearing of vegetation, will occur to the edge of this 10 m development setback. This letter documents my observations and recommendations based on the proposed development.

OVERVIEW

Lefferson Creek crosses under Teskey Way near the southeast corner of the property and flows northwestward. Vegetation from the southern boundary is dominated by early to middle seral deciduous forest mixed with invasive species, a few coniferous trees and some escaped cultivars. Dominant tree species are red alder (*Alnus rubra* Bong.) and paper birch (*Betula papyrifera* Marsh.). Other species include weeping willow (*Salix alba* L.), willow (*Salix* species) Japanese cherry (*Prunus serrulata* Lindl.), bitter cherry (*Prunus emarginata* Dougl.), European mountain ash (*Sorbus aucuparia* L.), Douglas maple (*Acer glabrum* Torr.), English walnut (*Juglans regia* L.), beaked hazelnut (*Corylus cornuta* Marsh.), common horsetail (*Equisetum arvense* L.), sword fern (*Polystichum munitum* (Kaulf.) Presl.), wall lettuce (*Latuca muralis* (L.) Fresen.) and several grass species. A few western red cedar occur along the creek and an individual Douglas-fir (*Pseudotsuga menziesii* (Mirb.) Franco var. *menziesii*) is growing along the fence line near the edge of the SPEA. A single western hemlock (*Tsuga heterophylla* (Raf.) Sarg.) seedling is growing just north of the driveway bridge. Blackberries (*Rubus discolor* Weihe & Nees) and (*Rubus laciniatus* Willd.), grow throughout the riparian area

wherever there is sufficient sunlight exposure. Salmonberry (*Rubus spectabilis* Pursh), thimbleberry (*Rubus parviflorus* Nutt.), Indian plum (*Osmoroniai cerasiformis* (T.&G.) Greene.), lady fern (*Athyrium filix-femina*(L.) Roth), spiny wood fern (*Dryopteris austriaca* (Jacq.) Woynar, stinging nettle (*Urtica dioica* L.), hedge nettle (*Stachys colleyae* Heller). Shaded sites on the creek's narrow floodplain are dominated by skunk cabbage and, in the southern reaches, common horsetail. Ferns are relatively abundant along northerly reaches.

In the northernmost 25 metres or so the creek is incised to a depth of one and a half to two metres and the riparian vegetation is dominated by second growth forest of western red cedar (*Thuja plicata* Donn ex D. Don) with a few paper birches. Understorey vegetation is sparse in deeply shaded places and mainly consists of lady fern, sword fern, spiny wood fern and skunk cabbage.

The area is within the Coastal western hemlock, very dry maritime subzone (CWHxm) but is near the boundary with the Coastal western hemlock, dry maritime subzone (CWHdm). The main site series in the SPEA are the CWHxm/07, Western Red Cedar – Foam Flower and the CWHxm/12, Western Red Cedar – Skunk Cabbage. Farther away from the creek and in areas of slightly higher relief, the CWHxm/05, Western Red Cedar-Sword Fern site series occurs. Site series in the area are seral variations of the three site series.

METHODS

A reconnaissance of the area was carried out followed by a more detailed look at conditions affecting windthrow and at trees that potentially could pose a hazard. Windfall assessment methods followed Stathers *et al.* 1994)[1]. Tree risk was assessed based on methods modified from those in the *Wildlife/Danger Tree Assessor's Course Workbook: Parks and Recreation Sites* (2006) and others (Hayes 2001; Matheny and Clark 1994; Wallis *et al.* 1980)[2]. In order for a tree to be considered dangerous, it must have signs of pathological or structural damage or defect and it must have a potential target.

One main modification from tree risk assessment methods such as WDTA (2006) or Matheny & Clark (1994) is that, here, potential targets were defined with respect to any location within the proposed development area. The other main departure from published methods (such as those cited above) is that a simplified approach, relying on visual tree

[1] Stathers, R.J., T.P. Rollerson and S.J. Mitchell. 1994. Windthrow handbook for British Columbia forests. B.C. Ministry of Forests Research Program, working paper 9401. Victoria.

[2] Wildlife Tree Committee of British Columbia (WDTA). 2006. Wildlife/danger tree assessor's course workbook: parks and recreation course module. Revised February 2006.
Hayes, E. 2001. Evaluating tree defects. 2nd ed. Safetrees. Rochester MN 55906. 30 pp.
Matheny, N.P., J.R. Clark. 1994. A photographic guide to the evaluation of hazard trees in urban areas. 2nd ed. ISA. Urbana IL.
Wallis, G.W., D.J. Morrison and D.W. Ross. 1980. Tree hazards in recreational sites in British Columbia: management guidelines. Canadian Forestry Service joint report No. 13. Reprinted March 1992. 52 pp.

assessment, was used in order to give a tree risk assessment at a cost that is reasonable with respect to the developer's risk in the initial stage of development.

Tree risk was assessed according to characteristics such as tree location (proximity to potential targets); species; approximate age; visible structural and pathological symptoms; and lean[3]. The hazard ratings used in WDTA (2006) and Matheny & Clark (1994) were not appropriate for this assessment. Detailed assessments requiring root excavations, aerial crown inspection (by tree climbing) and drilling (or other methods) to examine stem soundness were not undertaken. Trees showing visible symptoms of decay or structural weakness were assumed to be unsound. Trees suspected of having stem or root decay were tapped with a mallet or probed, but the presence or extent of decay was not verified by direct methods.

Such an approach is considered conservative with respect to identifying trees as hazardous. For example, a tree with stem scars is assumed to have significant stem decay and such a tree is considered to present a hazard (as long as there is a potential target for it to strike when it falls). In contrast, for typical tree assessments for parks and urban areas, the extent of decay is confirmed by drill cores or other methods, such as resistograph analysis.

Records for hourly maximum wind speed and direction from the nearest Environment Canada weather station (Agassiz) were reviewed. Topographic conditions that might affect windthrow were examined during field reconnaissance and from aerial photographs and topographic maps. Fallen trees were examined and their general condition, age and direction of fall were noted.

The base, stem and crown of trees within the SPEA[4] were viewed from all perspectives (360^0), using binoculars when necessary. Trees showing visual symptoms of potentially hazardous condition (as discussed above) were tagged with numbered, green, plastic, 4-centimetre diameter, circular tags at a height of roughly 1.5 to 2 metres above-ground, on the west side of each tree's stem. Tree tag numbers are # 050 - #076.

Tree height and diameter-breast-height (Dbh) were measured for each tagged tree. Tree heights were calculated using horizontal distance measured from a measuring tape and vertical angles measured with a clinometer. Dbh was measured at 1.4 metres above the point of tree germination[5]. Tree lean was measured with a bubble-level and direction of lean with a hand compass[6]. Trees were approximately located in the field and their locations were later checked and adjusted as needed by reference to the surveyor's map[7].

[3] In the terminology of WDTA, this corresponds to "visual assessment".
[4] "SPEA" is the streamside protection and enhancement area.
[5] 1.4 metres is the standard measurement height used for many hazard tree assessments and tree appraisals; 1.3 metres is the standard commonly used for WDTA and forestry applications in British Columbia.
[6] Compass declination set at 018^0 east.
[7] Murray & Associates. September 21, 2007. Flagged trees added September 24, 2007. File 9297 topo.

RESULTS & DISCUSSION

Windthrow

Damaging winds in the area come from the southeast, associated with frontal systems, and as easterly outflow winds during some periods in the winter. The area is somewhat sheltered from southerly storm winds; also, the orientation of the clearing boundary is more or less parallel to southerly winds. The SPEA is also sheltered from easterly outflow winds by topography. However, some windfall caused by westerly winds has occurred just beyond the northwest end of the SPEA.

Stand height is medium, about 20-30 metres. Except for the most northerly 25 metres or so, the riparian forest is dominated by deciduous tree species. Stand density is roughly estimated to average 700 stems per hectare.

Stem taper in cedar is generally moderate. Cedars commonly have flared butts.

Rooting depth is moderate to shallow. Rooting of some western red cedar and a few paper birches in the vicinity of flags H13 and H18 is only about twenty-five centimeters. A few trees in those locations have been uprooted. Some paper birch and western red cedars are stilt-rooted or have roots that have been exposed by soil erosion.

Soils are imperfectly to poorly drained through much of the SPEA, especially within a few metres of the creek's high water mark. In areas of somewhat higher relief and farther from the creek, they are moderately well drained.

Three wind thrown western red cedars near flag H19, adjacent to but outside of the development area, have incipient upper stem decay comprising about 70% stem radius.

Five wind thrown trees were found in the vicinity of the SPEA; four are western red cedars. Three of these cedar trees are northwest of Flag H19, west of the Lot 26 boundary, and one is in the SPEA, near Flag H13. All four trees are still green and appear to have been uprooted last winter (2006-2007). The fifth wind thrown tree is a paper birch near Flag H19 and on the east side of the creek. All five trees fell in northeasterly to easterly directions: *e.g.*, 060 to 080 degrees. Note that none of the trees are actually within the SPEA. Two trees in the vicinity of flag H13, one western red cedar and one paper birch, have been partially uprooted and have recovered and "self-corrected" their lean. Both of those trees were uprooted toward the east-northeast. All 7 of the wind thrown trees are relatively tall (25 to 30 metres) and are situated in or immediately adjacent to the creek's floodplain in sites where rooting depth is restricted, by a high water table, to twenty to thirty centimeters.

Danger Trees

Twenty-seven trees (tag #'s 050 - 076) within the riparian area were identified as potentially hazardous. They are summarized in the following table.

TABLE 1. Potential Hazard Trees in the SPEA

TREE #	SPECIES	DBH (cm)	HT. (m)	DEFECTS	COMMENTS
50	Cw	53.3	30	SS,RD	6 CD stems; only 1 is significantly large
51	Cw	60	32	CD,IB,SD,RB	Lean is for large stem only
52	Ep	44.2	25	CD,DB,SR	Leans away
53	Cw	26.9	20	CD,SS	53-55 are CD's of same tree
54	Cw	12.8	7	CD	Small tree, small parts, no target. Suppressed tree
55	Cw	44.2	28	CD,SS	Suppressed tree.
56	Cw	39.7	28	CD,SD	Branches all on west side. CD with 57
57	Cw	45	29	CD,DB,SD,SS	CD with 56
58	Cw	41.3	28	CD,RD,SD,SS	58-60 are CD's.
59	Cw	42.6	28	SD,SS	58-60 are CD's.
60	Cw	37.9	27	IB,SD,SS	58-60 are CD's.
61	Cw	20.1	9	SD,SS	No target
62	Ep	65	25	CD,DB,IB,RB,RD,SR	Tree has 4 CD stems. Remove 2 large stems leaning toward development. Other 2 lean away.
63	Ep	34.4	21	DB, exposed roots	Near H12.
64	Ep	19.9	19	CD,DB,SS	Near H12. D with 65. Leans away.
65	Ep	29.1	14	BT,CD,K,SS	Dead tree. CD with 64
66	Ep	25.8	12	DB,RD,SD	Dead tree. CD with 67
67	Ep	43.1	13	BT,CD,SD	Dead tree CD with 66.

68	Ep	34.1	20	CD	Remove Large CD branch leaning toward development area.
69	Dr	31.9	20	CD,DB, stem crack	
TREE #	**SPECIES**	**DBH (cm)**	**HT. (m)**	**DEFECTS**	**COMMENTS**
70	Dr	36.3	19	CD,SS	
71	Wi	60.0	21	CD,DB,LB,SS,	Remove large (tagged) CD branch leaning toward development area. Tree fort in tree.
72	Wi	47.0	18	DB,LB,SD	
73	Fd	50.9	22	Swollen stem @ branch whorls	Stem swelling could indicate heart rot or could be a sign of canker infection.
74	Dr	32.3	18	bark cracks	CD with 75. Young, thrifty tree. East of Lot 26 boundary.
75	Dr	32.8	18	IB, bark cracks, exposed roots	CD with 74. Young, thrifty tree. Probably won't fall toward development. East of Lot 26 boundary.
76	Prs	29.8	13	CD,IB,SD (cankers)	East of Lot 26 boundary.

Tree species symbols (column 2) are based on those used by the B.C. Ministry of Forests[8].

Most of the potentially hazardous trees in the SPEA are either western red cedars or paper birches. Between flag numbers H19 and H18, there are 11 western red cedars (Tree #'s 050 to 061), with various signs of pathological or structural defects. The trees range in size from 20.9 to 60 cm in diameter and 9 to 32 metres tall. Many of the trees are codominant stems originating close to ground level. Defect symptoms include root and stem decay, stem scarring, included bark, dead branches and weak branch or codominant stem attachment. There are eight paper birches in the SPEA showing signs of defect. They range in size from 19.9 to 60 cm in diameter and from 19 to 25 metres in height. Many of the trees are physiologically old and have defects that include stem and root decay, stem scars, included bark, broken tops, weakly attached codominant branches and stems and dead branches. There are two relatively large weeping willows: tree numbers 71 and 72 with stem decay, stem scars, weakly attached large branches and dead branches. Red alders are generally thriftier, healthier and smaller than the birches and willows. Four red alders were identified with visual signs of defects that are potentially hazardous: stem scars, weak codominant branches, included bark and dead branches.

A single Douglas-fir, Tree #73, occurs in the SPEA. It has many moderately large branches and shows stem swelling at many of its branch whorls. Stem swelling might be a sign of cankers or other fungal infection. One Japanese cherry growing near the edge of the south boundary of the SPEA, has weakly attached codominant branches, signs of stem decay, cankers and it is exuding resin.

[8] Symbols are the same as the B.C. Ministry of Forests symbols except for Japanese cherry (Japanese cherry is not recognized by the B.C. Ministry of Forests).

Height to diameter ratio is sometimes used as a rough index of individual tree stability with respect to windthrow. For coniferous trees, a ratio of ≤ 0.5 is usually considered to indicate stability; ratios ≥ 100 indicate instability. Intermediate values suggest intermediate stability. Forest grown trees often have ratios of 1.00 or more. Values for the trees in Table 1 average 0.56, ranging form 0.30 to 0.95. The highest value is for tree # 064, a paper birch. The highest value for western red cedar is 0.71, for Tree #060. The overall average of 0.56 for the above trees suggests general stability.

The total basal area of trees in Table 1 is 3.48 m^2/ha. That represents about three and one-half percent of the estimated total basal area for the entire stand of roughly 100 m^2/ha.

RECOMMENDATIONS

Windthrow

As discussed above, tall, shallow-rooted western red cedars and paper birches, such as some of those in the vicinity of flag H19–H18 and near flag H13, are prone to windfall from westerly winds. However, no new clearing is proposed in those areas. In other parts of the SPEA, windfall is absent, and windfall risk is probably low because:

- The trees are generally shorter
- Most trees are deciduous trees (which have a lower aerodynamic drag coefficient than most conifers)
- Topography partially shelters the SPEA from easterly, winter, outflow winds
- The forest edge is oriented more or less parallel with strong, southerly, storm winds.

Given the above, the proposed development should not increase windthrow risk for trees in the SPEA. Furthermore, any removal of hazard trees or hazardous parts of trees within the SPEA should result in a decrease of only one or two percent in tree density[9].

Tree Risk Assessment

Twenty-seven trees listed in Table 1 are positioned such that they have a potential to fall within the development area. The trees are listed again, in Table 2, along with recommendations for treatment.

[9] Tree density measured as basal area.

TABLE 2. Recommendations for Potential Hazard Trees in the SPEA

TREE #	SPECIES	DBH (cm)	HT (m)	COMMENTS	PROCEDURE
50	Cw	53.3	30	6 CD stems; only 1 is significantly large	M
51	Cw	60	32	Lean is for large stem only	M
52	Ep	44.2	25	Leans away	M
53	Cw	26.9	20	53-55 are CD's of same tree	M
54	Cw	12.8	7	Small tree, small parts, no target. Suppressed tree	M
55	Cw	44.2	28	Suppressed tree.	M
56	Cw	39.7	28	Branches all on west side. CD with 57	M
57	Cw	45	29	CD with 56	M
58	Cw	41.3	28	58-60 are CD's.	M
59	Cw	42.6	28	58-60 are CD's.	M
60	Cw	37.9	27	58-60 are CD's.	M
61	Cw	20.1	9	No target	M
62	Ep	65	25	Tree has 4 CD stems. Remove 2 large stems leaning toward development. Other 2 lean away.	MOD
63	Ep	34.4	21	Near H12.	M
64	Ep	19.9	19	Near H12. CD with 65.	R
65	Ep	29.1	14	Dead tree. CD with 64	R
66	Ep	25.8	12	Dead tree. CD with 67	R
67	Ep	43.1	13	Dead tree CD with 66.	R
68	Ep	34.1	20	Remove Large CD branch leaning toward development area.	MOD
69	Dr	31.9	20		R
70	Dr	36.3	19		M
71	Wi	60.0	21	Remove large (tagged) CD branch leaning toward development area. Tree fort in tree.	MOD
72	Wl	47.0	18		R

TREE #	SPECIES	DBH (cm)	HT (m)	COMMENTS	PROCEDURE
73	Fd	50.9	22	Stem swelling could indicate heart rot or could be a sign of canker infection.	M
74	Dr	32.3	18	CD with 75. Young, thrifty tree. East of Lot 26 boundary.	M
75	Dr	32.8	18	CD with 74. Young, thrifty tree. Probably won't fall toward development. East of Lot 26 boundary.	M
76	Prs	29.8	13	Hazardous branches are relatively small. East of Lot 26 boundary.	M

The meaning of the codes entered in the "Procedure" column of Table 2 is as follows:

M = monitor (carry out regular tree reassessment in the future)
MOD = modify (remove limbs or other tree parts)
R = remove (fall the tree)

Six trees are recommended for removal: tree #'s 064, 065, 066, 067, 069, and 072. Three of them, #'s 065, 066 and 067, are dead birches and #064 is a codominant stem of # 065. Tree # 069 is a red alder with a stem crack and weakly attached codominant branches; also, it has a 20^0 lean toward the development area. Tree #072 is a weeping willow with dead branches; weakly attached, large branches; and significant stem decay. The six trees comprise about 0.53% of the stand basal area, so effects on the stability of the remaining stand should be minimal.

Tree #'s 070, 074 and 074 are red alders. Number 070 leans so that the upper stem could reach the development area and it has some stem scars and weakly attached branches but appears to be sound. Numbers 074 and 075 are located just east of the property boundary. They show have some signs of minor defects but are generally thrifty and sound.

Tree #073, a Douglas-fir, has stem swellings that might be an indication of heart rot or canker infection; it is not possible to tell without a detailed tree assessment. It is located on the clearing boundary for the SPEA. There is a risk that the stem could fail during storm winds, especially if the tree's crown is loaded with snow or ice. Given the inferred pattern of windfall and storm winds for the area, it seems most likely that the tree would fall within the SPEA or toward the east or northeast, away from the development area. Nevertheless, there is still some chance that the tree could be a hazard to developments. Therefore it is recommended that either

- The tree is felled[10]. This seems like the simplest course of action but it means a valuable tree will be removed, perhaps unnecessarily.
- A detailed tree assessment is carried out. Then a better informed decision can be made to retain the tree or remove it.

Three trees, two paper birches and a weeping willow (tree #'s 062, 068 and 071) are recommended for modification. Two of tree # 62's codominant stems that are leaning

[10] If tree #073 is removed, the total basal area removed from the SPEA will be only about 0.73%.

toward the development area should be removed. Tree #068 has a large limb leaning toward the development area; it should be removed. Tree # 072 has a large codominant stem leaning toward the development area; that stem should be removed. Removing large limbs and stems will accelerate decay in the trees so they should be regularly monitored. Eventually the trees will need to be removed; however, in the meantime, they can continue to contribute to the SPEA habitat.

Nine western red cedars, tree #'s 050, 051, 053 and 055-060 and one paper birch, tree # 052, located in the northwest part of the SPEA, near flags H18 and H19, have been tagged. Any of these trees, because of their location and height, have a potential to fall within the development area. However, none of them appear to present a risk of any immediate failure that would threaten proposed developments. The hazard symptoms in the western red cedars are:

- Weakly attached candelabra branches and small spike tops that are too small to reach development targets
- Codominant stems with weak stem attachment..

Tree #052, a paper birch, has some dead branches, some weakly attached codominant branches and some exposed, stilt roots on its east side. However, it leans away from the development area and its stem and roots appear to be sound.

At some point in time, all trees fail. If all tree risk had to be entirely eliminated then all trees would need to be removed. That approach conflicts with Riparian Area Regulations and with the amenity value of trees to residents. In view of such considerations, it is recommended that the above trees (#'s 050-060) be retained but they must be regularly monitored.

Tree #'s 054 and 061 are small western red cedars that are unlikely to impact a target. Tree #063 is a paper birch that has a self-corrected lean to the east, some exposed roots and a few, small dead branch stubs. It appears to be sound and, it were to fall, would be likely to fall away from the development. Nevertheless, they should be monitored and if they shows signs of significant deterioration, they can be removed.

Monitoring should consist of regular, general, vigilant observation for tree damage or deterioration but also must include an *annual tree risk re-assessment* by a qualified arborist or forester for the *first 5 years* following development and *every 5 years after* that. Re-assessments should also be carried out following any severe windstorms or other disturbances.

Tree falling, topping, limbing and pruning must be carried out by qualified fallers and arborists and planned and executed to minimize damage to the residual stand. It should also be noted that felled trees are normally required to be left in the SPEA.

Tree Planting

Trees removed should be compensated for by planting trees according to guidelines from the B.C. Ministry of Environment[11]. In areas of well to imperfectly drained soils, a mixture of western red cedar with some paper birch, bitter cherry and red alder is recommended in order to enhance wildlife habitat and to promote sustainability of the riparian forest.

Trees *should not be planted on the* small *floodplain* of Lefferson Creek, where the water table is continually near the soil surface. If planting is needed in those areas, shrubs and small trees that adapted to the shallow, wet soils should be used. For example, native willows (*Salix* species), Douglas maple, vine maple (*Acer circinatum* Pursh), red osier dogwood (*Cornus stolonifera* Michx.), red elderberry (*Sambucus racemosa* L.), salmonberry or thimbleberry might be used. According to the guidelines, a total of about 7 trees taller than 1.5 metres and 14 trees taller than 2 metres will be needed (assuming that the above recommendations for tree removal are followed). If Tree #073 is removed, an additional 6 trees taller than 2 metres are required. If all the tagged trees were removed, an additional 11 trees taller than 1.5 metres and 56 trees taller than 2 metres would be needed. In that case, the grand total would be 18 trees taller than 1.5 metres and 76 trees taller than 2 metres.

It should not be assumed that trees will be readily available from nurseries when they are needed; it will likely be necessary to order them two or more years in advance. The developer should also be aware that the cost of seedlings, including their transportation and planting, can be a significant cost. An alternative to the planting according to the guidelines is to propose a planting and stand enhancement plan prepared by a professional forester.

Seedling selection, as well as methods and time of planting, should be determined in consultation with a qualified professional forester or agrologist.

[11] Ministry of Environment. Lands and Parks. 1996. B.C. Environment. Lower Mainland Region. Surrey, B.C.

LIMITATIONS

The above information reflects my professional judgment in light of the best information available at the time when field work was carried out and within the limits imposed by the specified methodology. The report reflects conditions as of 17 September 2007 and the development plans supplied by Jacques Whitford Limited dated 7 September 2007[12]. In particular, windfall and tree risk assessments are made with respect to current tree and environmental conditions. Tree risk should be updated on a regular basis.

Any use, other than by Jacques Whitford AXYS Limited for the purposes given in the project terms of reference, which a third party makes of the information or any reliance on decisions to be based on it are the responsibility of such third parties. J.T. Standish accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

I trust the above information meets your requirements. If you have any questions, please contact me at your earliest convenience.

Yours truly,

J.T. (Jace) Standish, M.Sc., P.Ag., R.P.F.
ISA Certified Arborist #
WDTA Certificate #

[12] Jacques Whitford AXYS. 2007. Preliminary SPEA determination, Detailed riparian Areas Regulation Assessment. Client H.G. Sanborn and Associates, Inc. Site address Lot 26 except part dedicated road on Plan 15965, Sections 5 & 8, Township 26, New Westminster. Drawing No. 2 Job 1023596, Scale 1: 500, Date 2007/07/09, Drawn by SS.

WINDFALL & TREE RISK ASSESSMENT
5633 TESKEY WAY

22 September 2007
J.T. Standish

City of Chilliwack

8550 Young Road
Chilliwack, B.C. V2P 8A4
Telephone: (604) 792-9311
Fax: (604) 795-8443

3360-20 (5635 Teskey Way)

Our File No.

Municipal Development

Tel: (604) 793-2906
Fax: (604) 793-2285

August 1, 2008

Caroline Astley
Madrone Environmental Services Ltd.
202 – 2602 Mt. Lehman Road
Abbotsford, BC V4X 2N3

Dear Madam:

QEP Assessment # (633) – 5635 Teskey Way (LOT 2 EXCEPT PART DEDICATED ROAD ON PLAN LMP15965 AND BCP30311, SECTIONS 5 AND 8 TOWNSHIP 26 NEW WESTMINSTER DISTRICT PLAN EPP45)

The City of Chilliwack has reviewed the environmental assessment report for the above noted property, the development plan, and the proposed modified SPEA boundary.

The report proposes a modified SPEA such that, in the opinion of the QEP, the overall riparian area does not result in an overall reduction of the amount of area providing riparian function (see QEP statement & report dated July 29, 2008). The SPEA boundary does not result in any portion being less than the distance shown on Form 1 from the high water mark. The new area added to the riparian area, to make up for those shifted out, are contiguous with the original SPEA area, and are located as close to the watercourse as possible with no extended panhandles.

We acknowledge the level of effort given in the development plan to avoid the SPEA boundary, as indicated on the attached site plan identified as Form 1.

This report will form the basis for support of a Development Permit with regard to the protection of natural features, functions or conditions that support fish life processes.

Sincerely,

Ian Crane
Director of Development

CH/ch

s.19(1)

BRITISH COLUMBIA
The Best Place on Earth

Ministry of Environment

Approval Application or Notification
for Changes In and About a Stream
Under Section 9 of the *Water Act* and Part 7 of the Water Act Regulations

*Incomplete or inaccurate forms do not constitute **Notification** & will not be accepted.*
Proceeding with works after submission of an incomplete or inaccurate form would be a violation of the Water Regulation

☐ APPROVAL APPLICATION ☑ NOTIFICATION[1] (see USERS' GUIDE)

1. Applicant Information

Name: APLIN & MARTIN CONSULTANTS LTD		
Address: #101 – 33230 OLD YALE ROAD		
City: ABBOTSFORD	Province: BC	Postal code: V2S 2L5
Phone: 778-880-0577	e-mail:	

2. Location of Works

Street Address of Works (or nearest town): 5633 TESKEY WAY, CHILLIWACK		
Stream Name: LEFFERSON CREEK	Flows Into: FRASER RIVER	
Location on Stream: 175 M NORTH OF TESKEY WAY		
Reference Landmarks: TESKEY WAY	Amount of disturbance in m^2: 5 M^2	
Multiple Sites: YES / (NO)	Number of sites: 1	
Latitude: 49° 06' 17.4"	Longitude: 121° 55' 54.4"	Elevation: 107.5 M
Legal description of property where work is proposed: LOT #2, SEC 5 & 8, TWP 26, NWD PLAN EPP45		

3. Drawing, Plan and Site Map

1. Attach drawing showing lot boundaries, location of buildings and of proposed works, stream direction and flow.
2. Attach a key map at an appropriate scale showing the location of the site.
3. Attach engineering drawings (may be required for works identified with [E] under **Requires Approval** section below).

4. Proposed Timing for Work

Start (day/month/year): 1/08/2009	Finish (day/month/year): 15/09/2009

FOR OFFICE USE ONLY

Date Received:	Water File Number:
	Client Number:
	Application Number:
	Amount Received:
	Receipt Number:

Requires Approval:	Requires Notification:
☐ Bank Erosion Protection [E] ☐ Bridge Installation/maintenance/removal (other than clear span) [E] ☐ Stream Diversion [QP] Diversion berm structure plan required ☐ Large Debris Removal – by machine [QP] plan required ☐ Gravel Removal [QP] ☑ Other: Provide details in space below *Provide culvert dimensions: Length: Width: Diameter:	☐ Installation*/maintenance/removal of road crossing **culvert** (*follow Forest Practices Code Stream Crossing Guidebook) ☐ Construction/maintenance/removal of a **clear span bridge** ☐ Construction/maintenance of a **pipeline crossing** ☐ Construction/maintenance/removal of a **pier or wharf** ☐ Cutting of **annual vegetation** in a stream channel ☐ Repair/maintenance of existing **dike** or **erosion protection works** ☑ Construction/maintenance of **storm water outfalls** ☐ Control of **Eurasian Watermilfoil** or other **aquatic vegetation** ☐ Construction/maintenance of **ice bridge, winter ford or snowfall** ☐ Maintenance of minor and routine nature by a public utility ☐ Removal of a **beaver dam** (As authorized under the Wildlife Act) ☐ Small debris removal – by hand ☐ Construction of a **temporary ford** ☐ Construction of a **temporary diversion** around a worksite

[E] Professional Engineer may be required
[QP] Qualified Professional may be required

The following require Notification and may only be undertaken by the Crown in right of either Canada or British Columbia, or their Agents:

Federal/Provincial

☐ Construction/maintenance/removal of a flow or water level **measuring device**

☐ Construction/removal of a **fish fence** or **screen, fish or game guard**

☐ Restoration/maintenance of **fish habitat**

The following require Notification and may only be undertaken by the Crown in right of either British Columbia, or a Municipality, or their Agents:

Provincial/Municipal

☐ Restoration/maintenance of a **stream channel**

☐ Clearing of an obstruction from a bridge or culvert during a flood emergency[1]

☐ Construction or placement of **erosion protection works or flood protection** works during a flood emergency[2]

[1] Some activities fitting the description for Notification may be reviewed by Ministry/Agency staff, who may decide that an Approval is required.

[2] Must be completed under direction of the Crown. No notification is required prior to undertaking works, but a description of changes must be submitted to a habitat officer within 72 hours of the change.

[QP] QP means a professional who through suitable education, experience, accreditation and knowledge may be reasonably relied on to provide advice within their area of expertise.

Detailed Description of Work to be Performed (continue on next page):

Total area disturbed by proposed works (all sites): 5 m^2

DEVELOPMENT OF STORM WATER OUTFALL TO LEFFERSON CREEK FROM DEVELOPMENT SITE. THIS OUTFLOW IS FOR STORM EVENTS EXCEEDING THE 10 YEAR STORMS AND WILL ONLY DISCHARGE DURING GREATER THAN 10 YEAR STORM EVENT.

SEE ATTACHED DRAWING

Detailed Description of Work to be Performed, continued (attach a separate document if more space is required):

6. Land Ownership

Please check one of the following:

☐ The applicant is the owner of the property.

☐ The property is Crown land. Tenure/licence number:

☑ The property is owned by the following Landowner (i.e. Landowner is different from applicant):

Landowner's Name: SYCAMORE DEVELOPMENTS LTD		
Address: #170 – 6660 GRAYBAR ROAD		
City: RICHMOND	Province: B.C	Postal code: V6W 1H9
Phone: 604 – 228 – 9770	e-mail:	

Do you have the Landowner's written approval to enter the land(s) to complete the works? ☑ Yes ☐ No

Note: a) Ownership of all parcels of land on which the proposed works will occur must be identified, b) do not attach the written approval with the application, but keep it for your files as you may be asked to produce it during an inspection or audit.

7. Who is doing the Work?

Contact information for company designing and supervising construction of the work (if different from applicant):

Company Name: NOT AVAILABLE AT THIS TIME.		
Contact Name:	Professional Affiliation:	
Address:		
City:	Province:	Postal Code:
Phone:	e-mail:	

Contact information for company undertaking the construction (if different from applicant):

Company Name:		
Contact Name:		
Address:		
City:	Province:	Postal Code:
Phone:	e-mail:	

s.19(1)

By submitting this application form, I declare that the information contained on this form is complete and accurate information. I have read, understood and will meet the requirements to construct works and changes in and about a stream in accordance with Section 9 of the *Water Act* and Part 7 Water Act Regulations including, for Notifications, **Terms and Conditions** as specified by a Habitat Officer of the Ministry of Environment.

Signed: [redacted] Application Date: 16/04/2009 day/month/year

9. Submission Instructions

Send the completed form along with the following attachments to the local office in which the proposed works are located. Addresses for local offices are listed on the instruction sheet.

Please note that if you are providing a Notification, no fees are required. However, a fee of $130.00 is required if you are submitting an application for an Approval. The $130.00 Approval application fee is not refundable. Payment for the Approval fee may be made at FrontCounter BC offices with a credit card.

If the proposed works require an Approval, prior to proceeding further with this application please ensure that this project will be able to proceed under the Federal *Fisheries Act*.

Required Attachments for both Notifications and Approvals:

- ☑ Sketch plan (mandatory)
- ☑ Key location map (mandatory)
- ☑ Engineering drawing (mandatory for works requiring approval noted with [5])
- ☐ For works requiring an Approval **only**, a cheque, money order or deposit by credit card for $130 payable to: Minister of Finance. The fee is non-refundable. No fee is required for a Notification.

10. Responsibilities

You are required to comply with all applicable federal, provincial and municipal laws and regulations. If you anticipate that the planned work may result in harmful alteration, disruption or destruction of fish habitat you should send a copy of your completed Notification/Approval Application directly to the nearest office of Fisheries and Oceans Canada. Review and comment by DFO may necessitate changes to the proposed works.

Has a copy of this notification/approval application been sent to Fisheries and Oceans Canada (check one)?
YES ☑ NO ☐

If YES, indicate the DFO office that the notification/approval application has been sent (for DFO offices, see Users' Guide):

45742 A YALE ROAD WEST
CHILLIWACK BC.
V2P 2N4

s.19(1)

2682

[redacted]

From: Yacyshen, Tom D ILMB:EX [Tom.Yacyshen@gov.bc.ca]
Sent: Monday, June 22, 2009 3:40 PM
To: [redacted]
Subject: FW: Notification under section 9 of the Water Act

From: Yacyshen, Tom D ILMB:EX
Sent: Monday, June 22, 2009 3:38 PM
To: [redacted]
Subject: FW: Notification under section 9 of the Water Act

Attention [redacted]

FCBC has received your application for notification, in the vicinity of Lefferson Creek and has assigned a tracking number and forwarded it to the Ministry of Environment, Environmental Stewardship Division (ESD) for their records.

The tracking number assigned to your application is: 2009-196 Date Received: June 16/09

Please note that ESD does not necessarily provide a response to each notification submission. Your receipt of this email is confirmation that your notification is on record and you need not follow up further with either FCBC or ESD.

If you have an Environmental Monitoring report to submit (or any other follow-up information), please reference the tracking number on it and submit the report directly to:

Veronica Russell

Ministry of Environment, Environmental Stewardship Division

200 – 10470 152 St

Surrey BC V3R 0Y3

Thank you!

s.19(1)

BRITISH COLUMBIA

Ministry of Environment

Approval Application or Notification
for Changes In and About a Stream
Under Section 9 of the *Water Act* and Part 7 of the Water Act Regulations

*Incomplete or inaccurate forms do not constitute **Notification** & will not be accepted.*
Proceeding with works after submission of an incomplete or inaccurate form would be a violation of the Water Regulation

☐ **APPROVAL APPLICATION** ☑ **NOTIFICATION[1] (see USERS' GUIDE)**

1. Applicant Information

Name: APLIN & MARTIN CONSULTANTS LTD		
Address: #101 – 33230 OLD YALE ROAD		
City: ABBOTSFORD	Province: BC	Postal code: V2S 2I5
Phone: 778-880-0577	e-mail:	

2. Location of Works

Street Address of Works (or nearest town): 5633 TESKEY WAY, CHILLIWACK		
Stream Name: LEFFERSON CREEK	Flows Into: FRASER RIVER	
Location on Stream: 175 M NORTH OF TESKEY WAY		
Reference Landmarks: TESKEY WAY	Amount of disturbance in m^2: 5 M^2	
Multiple Sites: YES / (NO)	Number of sites: 1	
Latitude: 49° 06' 17.4"	Longitude: 121° 55' 54.4"	Elevation: 107.5 M
Legal description of property where work is proposed: LOT 2, SEC 5 & 8, TWP 26, NWD PLAN EPP45		

3. Drawing, Plan and Site Map

1. Attach drawing showing lot boundaries, location of buildings and of proposed works, stream direction and flow.
2. Attach a key map at an appropriate scale showing the location of the site.
3. Attach engineering drawings (may be required for works identified with [E] under **Requires Approval** section below).

4. Proposed Timing for Work

Start (day/month/year): 1/08/2009	Finish (day/month/year): 15/09/2009

FOR OFFICE USE ONLY

Date Received:	Water File Number:
	Client Number:
	Application Number:
	Amount Received:
	Receipt Number:

JUN 24 2009

000057

Requires Approval:

- ☐ Bank Erosion Protection [E]
- ☐ Bridge Installation/maintenance/removal (other than clear span) [E]
- ☐ Stream Diversion [QP] Diversion berm structure plan required
- ☐ Large Debris Removal – by machine [QP] plan required
- ☐ Gravel Removal [QP]
- ☑ Other: Provide details in space below

*Provide culvert dimensions:

Length:

Width:

Diameter:

[E] Professional Engineer may be required
[QP] Qualified Professional may be required

Requires Notification:

- ☐ Installation*/maintenance/removal of road crossing **culvert** (*follow Forest Practices Code Stream Crossing Guidebook)
- ☐ Construction/maintenance/removal of a **clear span bridge**
- ☐ Construction/maintenance of a **pipeline crossing**
- ☐ Construction/maintenance/removal of a **pier or wharf**
- ☐ Cutting of **annual vegetation** in a stream channel
- ☐ Repair/maintenance of existing **dike** or **erosion protection works**
- ☑ Construction/maintenance of **storm water outfalls**
- ☐ Control of **Eurasian Watermilfoil** or other **aquatic vegetation**
- ☐ Construction/maintenance of **ice bridge, winter ford or snowfall**
- ☐ Maintenance of minor and routine nature by a public utility
- ☐ Removal of a **beaver dam** (As authorized under the Wildlife Act)
- ☐ Small debris removal – by hand
- ☐ Construction of a **temporary ford**
- ☐ Construction of a **temporary diversion** around a worksite

The following require Notification and may only be undertaken by the Crown in right of either Canada or British Columbia, or their Agents:

Federal/Provincial

- ☐ Construction/maintenance/removal of a flow or water level **measuring device**
- ☐ Construction/removal of a **fish fence** or **screen**, **fish or game guard**
- ☐ Restoration/maintenance of **fish habitat**

The following require Notification and may only be undertaken by the Crown in right of either British Columbia, or a Municipality, or their Agents:

Provincial/Municipal

- ☐ Restoration/maintenance of a **stream channel**
- ☐ Clearing of an obstruction from a bridge or culvert during a flood emergency[1]
- ☐ Construction or placement of **erosion protection works or flood protection** works during a flood emergency[2]

[1] Some activities fitting the description for Notification may be reviewed by Ministry/Agency staff, who may decide that an Approval is required.

[2] Must be completed under direction of the Crown. No notification is required prior to undertaking works, but a description of changes must be submitted to a habitat officer within 72 hours of the change.

[QP] QP means a professional who through suitable education, experience, accreditation and knowledge may be reasonably relied on to provide advice within their area of expertise.

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SEE ATTACHED DRAWING

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Please check one of the following:

☐ The applicant is the owner of the property.

☐ The property is Crown land. Tenure/licence number:

☑ The property is owned by the following Landowner (i.e. Landowner is different from applicant):

Landowner's Name: SYCAMORE DEVELOPMENTS LTD		
Address: #170 – 6660 GRAYBAR ROAD		
City: RICHMOND	Province: BC	Postal code: V6W 1H9
Phone: 604-228-9770	e-mail:	

Do you have the Landowner's written approval to enter the land(s) to complete the works? ☑ Yes ☐ No

Note: a) Ownership of all parcels of land on which the proposed works will occur must be identified, b) do not attach the written approval with the application, but keep it for your files as you may be asked to produce it during an inspection or audit.

7. Who is doing the Work?

Contact information for company designing and supervising construction of the work (if different from applicant):

Company Name: NOT AVAILABLE AT THIS TIME.		
Contact Name:	Professional Affiliation:	
Address:		
City:	Province:	Postal Code:
Phone:	e-mail:	

Contact information for company undertaking the construction (if different from applicant):

Company Name:		
Contact Name:		
Address:		
City:	Province:	Postal Code:
Phone:	e-mail:	

s.19(1)

By submitting this application form, I declare that the information contained on this form is complete and accurate information. I have read, understood and will meet the requirements to construct works and changes in and about a stream in accordance with Section 9 of the *Water Act* and Part 7 Water Act Regulations including, for Notifications, **Terms and Conditions** as specified by a Habitat Officer of the Ministry of Environment.

Signed: [redacted] Application Date: 16/06/2009

9. Submission Instructions

Send the completed form along with the following attachments to the local office in which the proposed works are located. Addresses for local offices are listed on the instruction sheet.

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Required Attachments for both Notifications and Approvals:

☑ Sketch plan (mandatory)

☑ Key location map (mandatory)

☑ Engineering drawing (mandatory for works requiring approval noted with E)

☐ For works requiring an Approval **only**, a cheque, money order or deposit by credit card for $130 payable to: Minister of Finance. The fee is non-refundable. No fee is required for a Notification.

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Has a copy of this notification/approval application been sent to Fisheries and Oceans Canada (check one)?
YES ☑ NO ☐

If YES, indicate the DFO office that the notification/approval application has been sent (for DFO offices, see Users' Guide):

45742 A YALE ROAD WEST
CHILLIWACK BC.
V2P 2N4

Craig, this information package was dropped off at Chill by mistake I talked to the consultants and they say it should actually be here.
I am not sure if it is for you or Lisa

Cheers PHP

s.19(1)

APLIN & MARTIN CONSULTANTS LTD

■ ENGINEERING ■ PLANNING ■ SURVEYING ■ PROJECT MANAGEMENT

201 - 12448 - 82 Avenue
Surrey, B.C., Canada V3W 3E9
☎ 604-597-9058 🖷 604-597-9061

101 – 33230 Old Yale Road
Abbotsford, BC V2S 2J5
☎ 778-880-0577 🖷 778-880-0578

✉ general@aplinmartin.com
🌐 www.aplinmartin.com

TRANSMITTAL FORM

To:	**DFO**	**Date:**	**June 16, 2009**
	45742A – Old Yale Rd West	**From:**	[redacted]
	Chilliwack, BC, V2P 2N4	**Project:**	**Teskey Way**
Department:		**Your File Number:**	
Attention:		**Our File Number:**	**26182**
Phone Number:	**604-702-2278**		

THE FOLLOWING DOCUMENTS ARE BEING FORWARDED

COPIES	DRAWING No. or TITLE	REMARKS
1	Plans	

Comments:

Herewith ____ Under Separate Cover ____ For Your Approval / or Comments ____

By Mail ____
By Courier X - Overnight ____
- Regular x
- Rush ____
- Hot ____
- Super Hot ____

For Pick-Up ____
Hand Delivered ____

Signed By: [redacted]

fax cc:

000061

s.19(1)

APLIN & MARTIN CONSULTANTS LTD

■ ENGINEERING ■ PLANNING ■ SURVEYING ■ PROJECT MANAGEMENT

201 - 12448 - 82 Avenue
Surrey, B.C., Canada V3W 3E9
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☎ 778-880-0577 🖷 778-880-0578

✉ general@aplinmartin.com
🌐 www.aplinmartin.com

TRANSMITTAL FORM

To:	**DFO**	**Date:**	**June 16, 2009**
	45742A – Old Yale Rd West	**From:**	[redacted]
	Chilliwack, BC, V2P 2N4	**Project:**	**Teskey Way**
Department:		**Your File Number:**	
Attention:		**Our File Number:**	**26182**
Phone Number:	**604-702-2278**		

THE FOLLOWING DOCUMENTS ARE BEING FORWARDED

COPIES	DRAWING No. or TITLE	REMARKS
1	Approval Application or Notifcation	
1	Plans	
1	Riparian areas Regulation: Assessment Report	

Comments:

RECEIVED
JUN 19 2009

Herewith ____ Under Separate Cover ____ For Your Approval / or Comments ____

By Mail ____
By Courier X - Overnight ____ Signed By: [redacted]
- Regular X
- Rush ____ fax cc:
- Hot ____
- Super Hot ____

For Pick-Up ____
Hand Delivered ____

Title:	Lefferson Creek; Storm Water Outfall for Teskey Way Development-		Receive Date: 2009/06/24
PATH File No.:	09-HPAC-PA2-00397	Habitat File No:	

Activity: Note to File

Action ID No.: 5
Action Date: April 02, 2012
Document Date:

To:
From:

Description: Status has changed from: Active To Completed/Closed
By: Berg, Sandra

Action: No Change/No Action Required for this Activity

Effective Date:
Expiry Date - HADD/Serious Harm:
Expiry Date - Other :
Compensation/Offsetting:
Included in List of Records:
Species at Risk:

Time Spent (Hrs): 0.00
Authorization Rationale:

Title:	Lefferson Creek; Storm Water Outfall for Teskey Way Development-		Receive Date: 2009/06/24
PATH File No.:	09-HPAC-PA2-00397	Habitat File No:	

Action ID No.: 4

Activity: Note to File

Action Date: April 07, 2010

Document Date:

To:

From:

Description: Status has changed from: Completed/Closed To Active

Action: No Change/No Action Required for this Activity

Effective Date:

Expiry Date - HADD/Serious Harm:

Expiry Date - Other :

Compensation/Offsetting:

Time Spent (Hrs): 0.00

Included in List of Records:

Authorization Rationale:

Species at Risk:

Title:	Lefferson Creek; Storm Water Outfall for Teskey Way Development-		Receive Date: 2009/06/24
PATH File No.:	09-HPAC-PA2-00397	Habitat File No:	

Action ID No.: 3

Activity: Note to File
Action Date: April 07, 2010
Document Date:

To: Ω Berg, Sandra {x}
From: Ω Kahl, Cory {x}

Description: Assessor has been changed from: Kahl, Cory To Berg, Sandra L.

Action: Ω Lead Assessor Changed {x}

Effective Date:
Expiry Date - HADD/Serious Harm:
Expiry Date - Other :
Compensation/Offsetting:

Time Spent (Hrs): 0.00
Included in List of Records:
Authorization Rationale:
Species at Risk:

Title:	Lefferson Creek; Storm Water Outfall for Teskey Way Development-		Receive Date: 2009/06/24
PATH File No.:	09-HPAC-PA2-00397	Habitat File No:	

Action ID No.: 2

Activity: Note to File

Action Date: March 29, 2010

Document Date:

To:

From:

Description: Status has changed from: Active To Completed/Closed

Action: No Change/No Action Required for this Activity

Effective Date:

Expiry Date - HADD/Serious Harm:

Expiry Date - Other :

Compensation/Offsetting:

Time Spent (Hrs): 0.00

Included in List of Records:

Authorization Rationale:

Species at Risk:

Title:	Lefferson Creek; Storm Water Outfall for Teskey Way Development-		Receive Date: 2009/06/24
PATH File No.:	09-HPAC-PA2-00397	Habitat File No:	

		Action ID No.:	1
Activity:	Note to File	Action Date:	March 29, 2010
		Document Date:	
To:			
From:			
Description:	Lisa McDonald provided advice, no fish habitat involved.		
Action:	No Change/No Action Required for this Activity	Effective Date:	
		Expiry Date - HADD/Serious Harm:	
		Expiry Date - Other :	
		Compensation/Offsetting:	
Time Spent (Hrs):	0.00	Included in List of Records:	
Authorization Rationale:		Species at Risk:	

s.19(1)

McDonald, Lisa

From: [redacted]
Sent: July 28, 2009 11:50 AM
To: McDonald, Lisa
Cc: James Kay
Subject: RE: Lefferson Creek, Teskey Way

Dear Lisa
The notification was sent out as we will be discharging our storm water into the creek. We will not be working in the creek and the water will be cleaned using a oil separator/ silt control device. Please contact me at my office to discuss.
Thanks

[redacted]

Aplin & Martin Consultants Ltd.
Suite 101 - 33230 Old Yale Road
Abbotsford, BC V2S 2J5
ph. 778-880-0577 [redacted]
fax 778-880-0578
[redacted]

From: McDonald, Lisa [mailto:Lisa.McDonald@dfo-mpo.gc.ca]
Sent: Tuesday, July 28, 2009 11:08 AM
To: [redacted]
Subject: Lefferson Creek, Teskey Way

Dear [redacted]

I received a copy of the Ministry of Environment *Water Act* Notification form you submitted to the Chilliwack DFO office in late June. Please note that the information provided in that notification form is intended to satisfy the Provincial Ministry of Environment's *Water Act* notification requirements, and does not contain the information required by DFO to review the project pursuant to the Federal *Fisheries Act*.

For your reference, I have attached a document titled *Fisheries Act and the Project Review Process* which gives a brief overview of the habitat protection provisions of the *Fisheries Act* and project review process, and includes information relating to DFO's habitat policy objectives and decision frameworks.

<<Lower Fraser Project Review Process.pdf>>
Please note that, pursuant to section 35(1) of the *Fisheries Act*, it is unlawful to conduct works or undertakings that will result in the harmful alteration, disruption or destruction of fish habitat (HADD), unless authorized by DFO. Fish habitat is defined as spawning grounds and nursery, rearing, food supply and migration areas upon which fish depend on directly or indirectly to fulfill their life processes. As streamside vegetation provides many features and functions (e.g. food supply) upon which fish depend, it is also protected as fish habitat under the

Fisheries Act.

By submitting the *Water Act* notification to DFO, I am not sure if you had intended on notifying DFO of the works as a courtesy, or if you were requesting a *Fisheries Act* review and/or authorization. If it was intended strictly as a notification, I will add the file to the compliance monitoring list and one of our Biologists or Technicians will likely visit the site to monitor compliance with the habitat protection provisions of the *Fisheries Act*.

I have also attached a copy of DFO *Lower Fraser Area's Project Review Information Requirements for Works Affecting Fish Habitat*. The information requested in that document is the minimum required for DFO to evaluate project compliance with the *Fisheries Act*. Prior to conducting any works that have the potential to affect fish or fish habitat, proponents typically submit their *Project Review Information Requirements* to DFO and request a review pursuant to the *Fisheries Act*. At that point, DFO can evaluate the information to determine whether or not a HADD is likely to occur and provide comments and/or advice and/or authorization for the works.

For future reference, if you would like for DFO to review your proposed works pursuant to the *Fisheries Act*, please complete the *Project Review Information Requirements* in full (including items 10-17 that require information be provided on separate pages) and submit them to DFO. For works within the FVRD boundary, please submit the information to the Mission Field Office located at 32873 London Avenue, Mission, BC, V2V 6H7. For any other area in the Lower Fraser Area, please submit your plans to the Annacis Island office at Unit 3, 100 Annacis Parkway, Delta, BC, V3M 6A2.

If you were looking for advice, comments or an authorization from DFO for the subject works, we will require additional information. At this point, given the proximity to the standard instream work window, I recommend that you retain the services of a qualified environmental professional to review your proposed plans and develop a mitigation strategy to avoid impacts to fish or fish habitat associated with your project. If, after considering all applicable mitigation measures, there are impacts that can not be mitigated to avoid a HADD (immediate or future), please submit your project review information, consistent with the attached form to DFO at 32873 London Avenue, Mission, BC, V2V 6H7, attention Lisa McDonald.

<<Project Review Information Requiremnts.pdf>>
If you have any questions, please contact me by email at lisa.mcdonald@dfo-mpo.gc.ca.

Sincerely
Lisa McDonald, B.Sc., Dipl. Tech.
Habitat Biologist | *Biologiste de l'habitat*
Fisheries and Oceans Canada | *Pêches et Océans Canada*
Habitat and Enhancement Branch | *Direction de l'habitat et de la mise en valeur*
Lower Fraser East | *Secteur de l'est du Bas de Fraser*
E-mail | *Courriel* lisa.mcdonald@dfo-mpo.gc.ca

s.19(1)

McDonald, Lisa 5300-02-C-00-09-15

From: McDonald, Lisa
Sent: February 23, 2010 1:21 PM
To: [redacted]
Cc: Berg, Sandra
Subject: RE: Lefferson Creek, Teskey Way

Hi [redacted]

Works should not be competed anywhere within the streamside protection and enhancement area (SPEA) without prior approval, guidance or advice from DFO. If there is some reason why you must conduct works within the SPEA (i.e. it cannot be avoided), and your works are not covered under a Regional Operational Statement (http://www-heb.pac.dfo-mpo.gc.ca/decisionsupport/os/operational_statements_e.htm) then you should submit your project plans to DFO for review.

Please note that I am no longer the lead DFO habitat management representative for the Chilliwack area. Tomorrow will be my last day with DFO. Please contact Sandi Berg at 604.666.3363 to discuss projects (including this one) in the Chilliwack area.

Sincerely
Lisa McDonald, B.Sc., Dipl. Tech.
Habitat Biologist | *Biologiste de l'habitat*
Fisheries and Oceans Canada | *Pêches et Océans Canada*
Habitat and Enhancement Branch | *Direction de l'habitat et de la mise en valeur*
Lower Fraser East | *Secteur de l'est du Bas de Fraser*
Telephone | *téléphone* 604.814.1070
Facsimile | *télécopieur* 604.814.1064
E-mail | *Courriel* lisa.mcdonald@dfo-mpo.gc.ca

From: [redacted]
Sent: January 27, 2010 10:41 AM
To: McDonald, Lisa
Subject: RE: Lefferson Creek, Teskey Way

Hi Lisa
It was nice talking to you last month. I believe that you said that as long as we stayed outside the wetted perimeter that we did not need DFO approval. If this is correct could you please send me a email stating this as the City of Chilliwack want something from DFO. If you have any questions please call me at my office.
Thanks

[redacted]

Aplin & Martin Consultants Ltd.
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Abbotsford, BC V2S 2J5
ph. 778-880-0577 [redacted]

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[redacted]

From: McDonald, Lisa [mailto:Lisa.McDonald@dfo-mpo.gc.ca]
Sent: Tuesday, July 28, 2009 11:08 AM
To: [redacted]
Subject: Lefferson Creek, Teskey Way

Dear [redacted]

I received a copy of the Ministry of Environment *Water Act* Notification form you submitted to the Chilliwack DFO office in late June. Please note that the information provided in that notification form is intended to satisfy the Provincial Ministry of Environment's *Water Act* notification requirements, and does not contain the information required by DFO to review the project pursuant to the Federal *Fisheries Act*.

For your reference, I have attached a document titled *Fisheries Act and the Project Review Process* which gives a brief overview of the habitat protection provisions of the *Fisheries Act* and project review process, and includes information relating to DFO's habitat policy objectives and decision frameworks.

<<Lower Fraser Project Review Process.pdf>>
Please note that, pursuant to section 35(1) of the *Fisheries Act*, it is unlawful to conduct works or undertakings that will result in the harmful alteration, disruption or destruction of fish habitat (HADD), unless authorized by DFO. Fish habitat is defined as spawning grounds and nursery, rearing, food supply and migration areas upon which fish depend on directly or indirectly to fulfill their life processes. As streamside vegetation provides many features and functions (e.g. food supply) upon which fish depend, it is also protected as fish habitat under the *Fisheries Act*.

By submitting the *Water Act* notification to DFO, I am not sure if you had intended on notifying DFO of the works as a courtesy, or if you were requesting a *Fisheries Act* review and/or authorization. If it was intended strictly as a notification, I will add the file to the compliance monitoring list and one of our Biologists or Technicians will likely visit the site to monitor compliance with the habitat protection provisions of the *Fisheries Act*.

I have also attached a copy of DFO *Lower Fraser Area's Project Review Information Requirements for Works Affecting Fish Habitat*. The information requested in that document is the minimum required for DFO to evaluate project compliance with the *Fisheries Act*. Prior to conducting any works that have the potential to affect fish or fish habitat, proponents typically submit their *Project Review Information Requirements* to DFO and request a review pursuant to the *Fisheries Act*. At that point, DFO can evaluate the information to determine whether or not a HADD is likely to occur and provide comments and/or advice and/or authorization for the works.

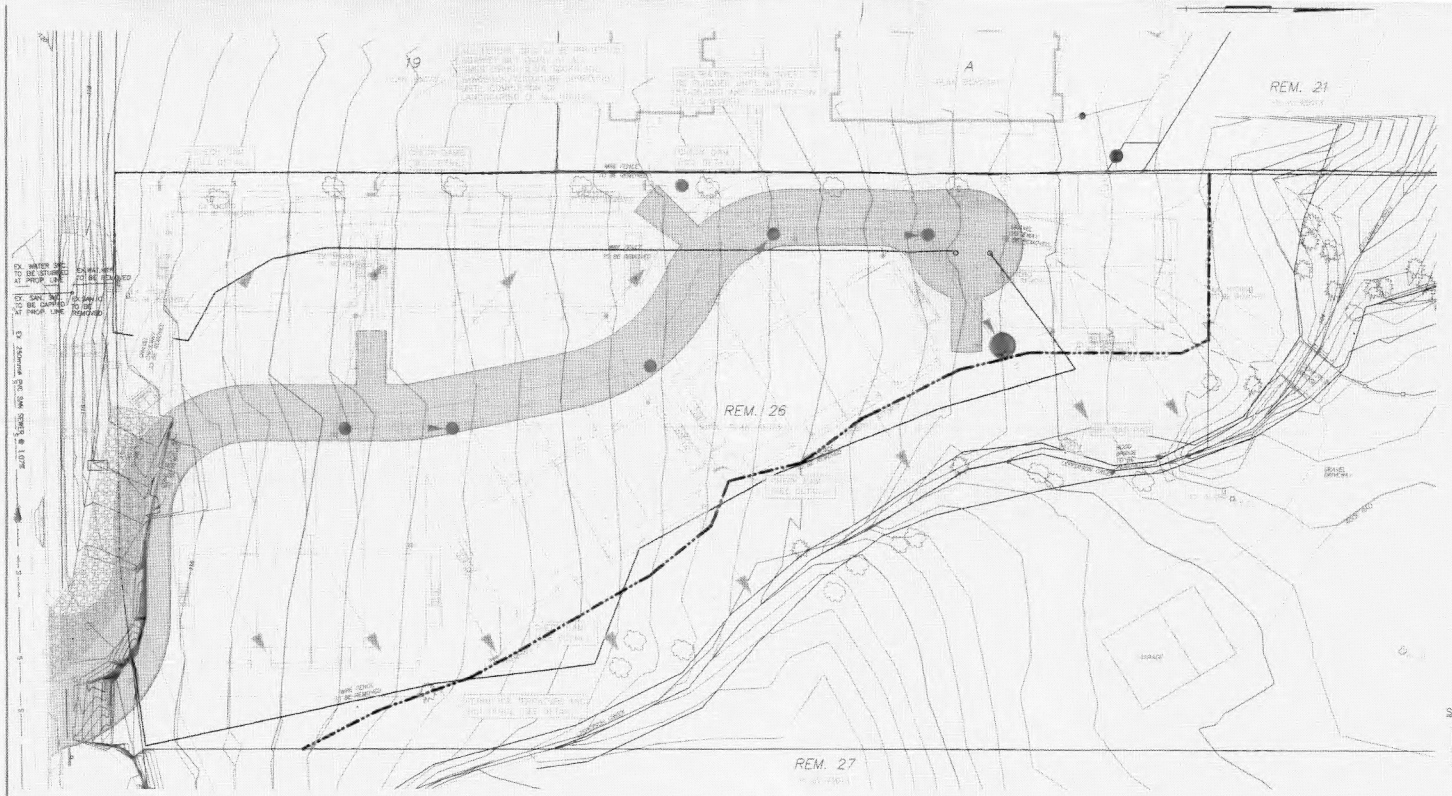
For future reference, if you would like for DFO to review your proposed works pursuant to the *Fisheries Act*, please complete the *Project Review Information Requirements* in full (including items 10-17 that require information be provided on separate pages) and submit them to DFO. For works within the FVRD boundary, please submit the information to the Mission Field Office located at 32873 London Avenue, Mission, BC, V2V 6H7. For any other area in the Lower Fraser Area, please submit your plans to the Annacis Island office at Unit 3, 100 Annacis Parkway, Delta, BC, V3M 6A2.

If you were looking for advice, comments or an authorization from DFO for the subject works, we will require

additional information. At this point, given the proximity to the standard instream work window, I recommend that you retain the services of a qualified environmental professional to review your proposed plans and develop a mitigation strategy to avoid impacts to fish or fish habitat associated with your project. If, after considering all applicable mitigation measures, there are impacts that can not be mitigated to avoid a HADD (immediate or future), please submit your project review information, consistent with the attached form to DFO at 32873 London Avenue, Mission, BC, V2V 6H7, attention Lisa McDonald.

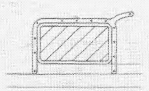
<<Project Review Information Requiremnts.pdf>>
If you have any questions, please contact me by email at lisa.mcdonald@dfo-mpo.gc.ca.

Sincerely
Lisa McDonald, B.Sc., Dipl. Tech.
Habitat Biologist | *Biologiste de l'habitat*
Fisheries and Oceans Canada | *Pêches et Océans Canada*
Habitat and Enhancement Branch | *Direction de l'habitat et de la mise en valeur*
Lower Fraser East | *Secteur de l'est du Bas de Fraser*
E-mail | *Courriel* lisa.mcdonald@dfo-mpo.gc.ca



SILT CONTROL NOTES

1. ALL WORK TO BE UNDERTAKEN AND COMPLETED BY THE CONTRACTOR IN SUCH A MANNER AS TO PREVENT THE RELEASE OF SEDIMENT LADEN WATER INTO ANY WATERCOURSE OR STORM SEWER.
2. ALL SEDIMENT CONTROL FACILITIES SHOWN MUST REMAIN IN PLACE UNTIL SOIL OR DUTIES HAVE BEEN CONSTRUCTED.
3. WHILE SITE CONSTRUCTION IS ONGOING, SITE CONTRACTOR IS TO BE RESPONSIBLE FOR ENSURING SEDIMENT CONTROL FACILITIES ARE MAINTAINED AND WORKING AUTOMATICALLY TO CONTROL ALL SEDIMENTS FROM THE SITE. ALL FAULTIES SHALL BE INSPECTED BY THE CONTRACTOR ON A WEEKLY BASIS TO ENSURE PROPER OPERATION UNTIL REMOVAL.
4. SILT FENCE IS TO BE 'CONTRAL SILT FENCE PLUS' OR EQUIVALENT AS APPROVED BY THE ENGINEER. FENCE TO HAVE MIN. CLEAR WATER FLOW RATE OF 0.0015m³/s/m/m. CLOTH TO BE STAPLED @ 150mm O/C TO 100mm x 100mm WOOD POSTS SPACED AT 1.5m O/C. BOTTOM OF SILT FENCE TO BE ANCHORED AS PER DETAIL.
5. ALL EXPOSED SURFACES REMAINING LONGER THAN SEVEN (7) DAYS TO BE PROTECTED FROM EROSION BY INSTALLATION / TEMPORARY OR PERMANENT OF POLYETHYLENE SHEETING, EROSION CONTROL MATTING, MULCHING, HYDRO-SEEDING, ETC.
6. ALL CATCH BASINS TO HAVE UPSTREAM SEDIMENT TRAPS MAINTENABLE TO INCLUDE, BUT NOT LIMITED TO, STREET SWEEPING, SEWER FLUSHING, REMOVAL OF ACCUMULATED SEDIMENT AND REINSTATEMENT OF FENCE OR GRATES.
7. IF CONTRACTOR DOES NOT ACHIEVE ACCEPTABLE WATER QUALITY, CONTRACTOR WILL BE RESPONSIBLE FOR RENTAL AND OPERATION OF MODULAR TRUCK MOUNT WASH AND/OR MECHANICAL FILTRATION UNIT AS DIRECTED BY ENGINEER



FILTER SOCK AROUND CATCH BASIN

TERRATUBE AND SILT FENCE DETAIL

DRAIN ROCK CHECK DAM DETAIL

APLIN & MARTIN CONSULTANTS LTD

CLIENT: SYCAMORE DEVELOPMENTS LTD.

PROJECT: 21-UNIT TOWNHOUSE DEVELOPING - 5633 TESKEY WAY

EROSION AND SEDIMENT CONTROL PLAN

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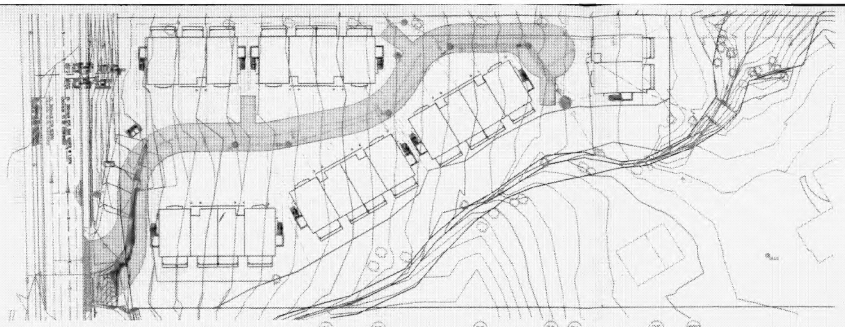

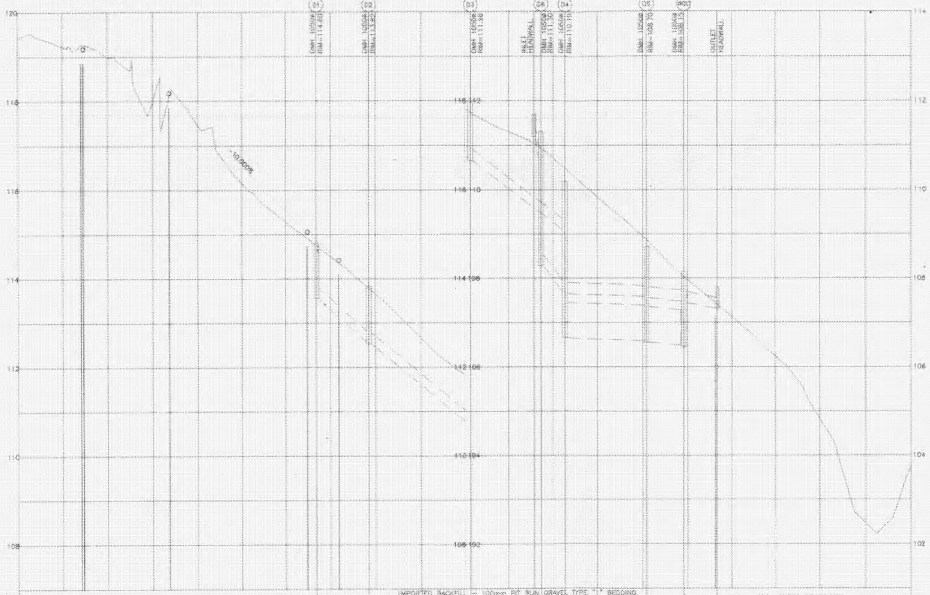

APLIN & MARTIN CONSULTANTS LTD

FEBRUARY 12, 2016

CLIENT: SYCAMORE DEVELOPMENTS LTD

PROJECT: 21-UNIT TOWNHOUSE DEVELOPING - 5633 TESKEY WAY

ROAD AND STORM PLAN & PROFILE

26182 – 06

06 OF 09

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			APLIN & MARTIN CONSULTANTS LTD	CLIENT: SYCAMORE DEVELOPMENTS LTD. PROJECT: 21-UNIT TOWNHOUSE DEVELOPING - 5633 TESKEY WAY STORMWATER MANAGEMENT PLAN	26182 - 03 03 OF 09